Motherboards

MXGG Series

ATX Motherboard with 5 PCI Slots and 1 PCIe Slot, VGA, SATA, USB, LAN and Audio

User's Manual

VER. 1.1C• AUG 12

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Chapter

1

Introduction

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1.1 Introduction

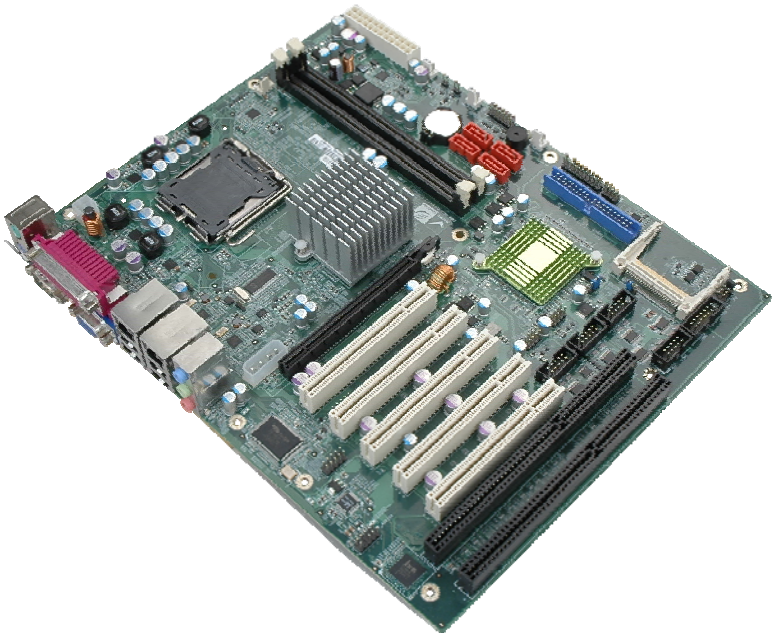

Figure 1-1: MXGG

The MXGG is an ATX motherboard with an 800/1066/1333 MHz front side bus. The LGA775 socket accepts Intel® Core™2 Duo/Quad processors and the motherboard supports two DDR3 DIMMs up to 4.0 GB each (8.0 GB total). The MXGG includes VGA output with up to QXGA resolution. Multiple expansion cards may be added, including PCIe x16, PCI and ISA interface. Other features include four SATA 3Gb/s, dual PCIe GbE, digital I/O, five RS-232 serial ports, one RS-232/422/485 serial ports, one parallel port, audio jacks and eight USB ports.

1.2 Benefits

Some of the MXGG motherboard benefits include:

- Powerful graphics
- Multiple LAN connections
- Multiple expansion capabilities

1.3 Features

Some of the MXGG motherboard features are listed below:

- ATX form factor
- RoHS compliant
- LGA775 CPU socket
- Supports two DDR3 DIMMs
- Supports dual display via VGA port and optional PCIe x16 SDVO expansion card
- Two Gigabit Ethernet connectors
- Four SATA connectors
- Eight USB ports
- Six serial ports
- Supports PCI and ISA expansion cards with following combinations
  - Five PCI cards and one ISA card
  - Four PCI cards and two ISA cards

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1.4 Connectors

The connectors on the MXGG are shown in the figure below.

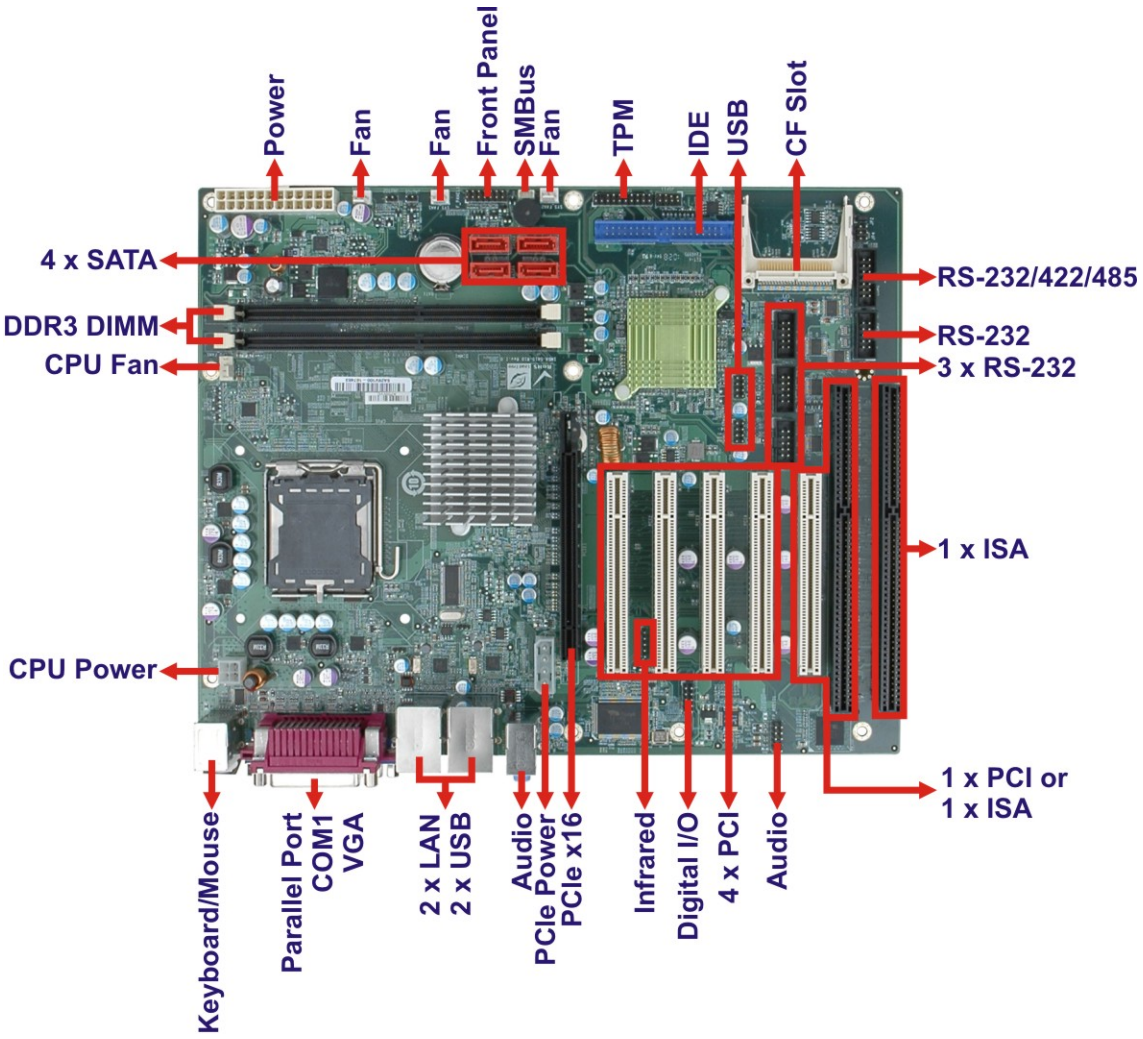

Figure 1-2: Connectors

1.5 Dimensions

The main dimensions of the MXGG are shown in the diagram below.

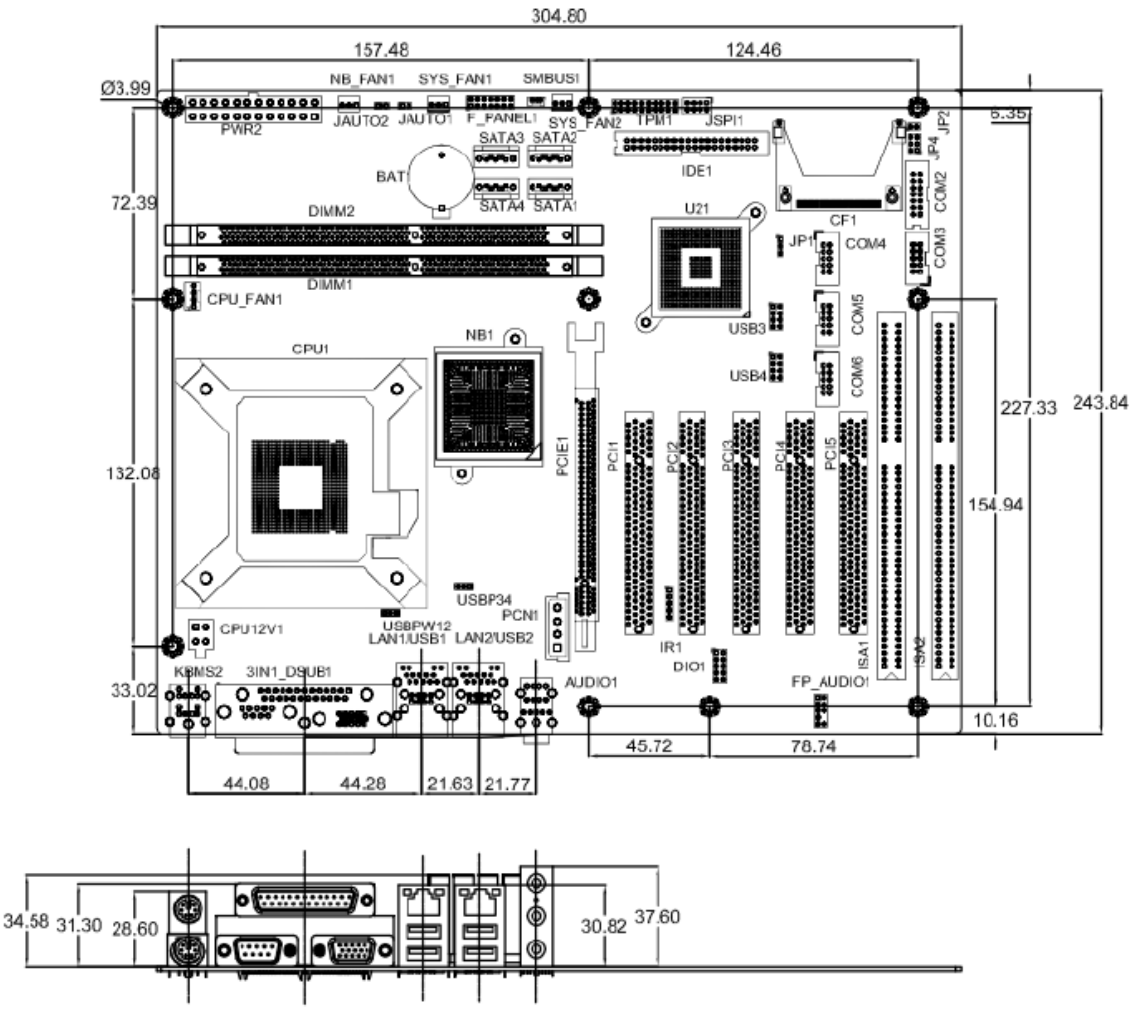

Figure 1-3: Dimensions (mm)

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1.6 Data Flow

Figure 1-4 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

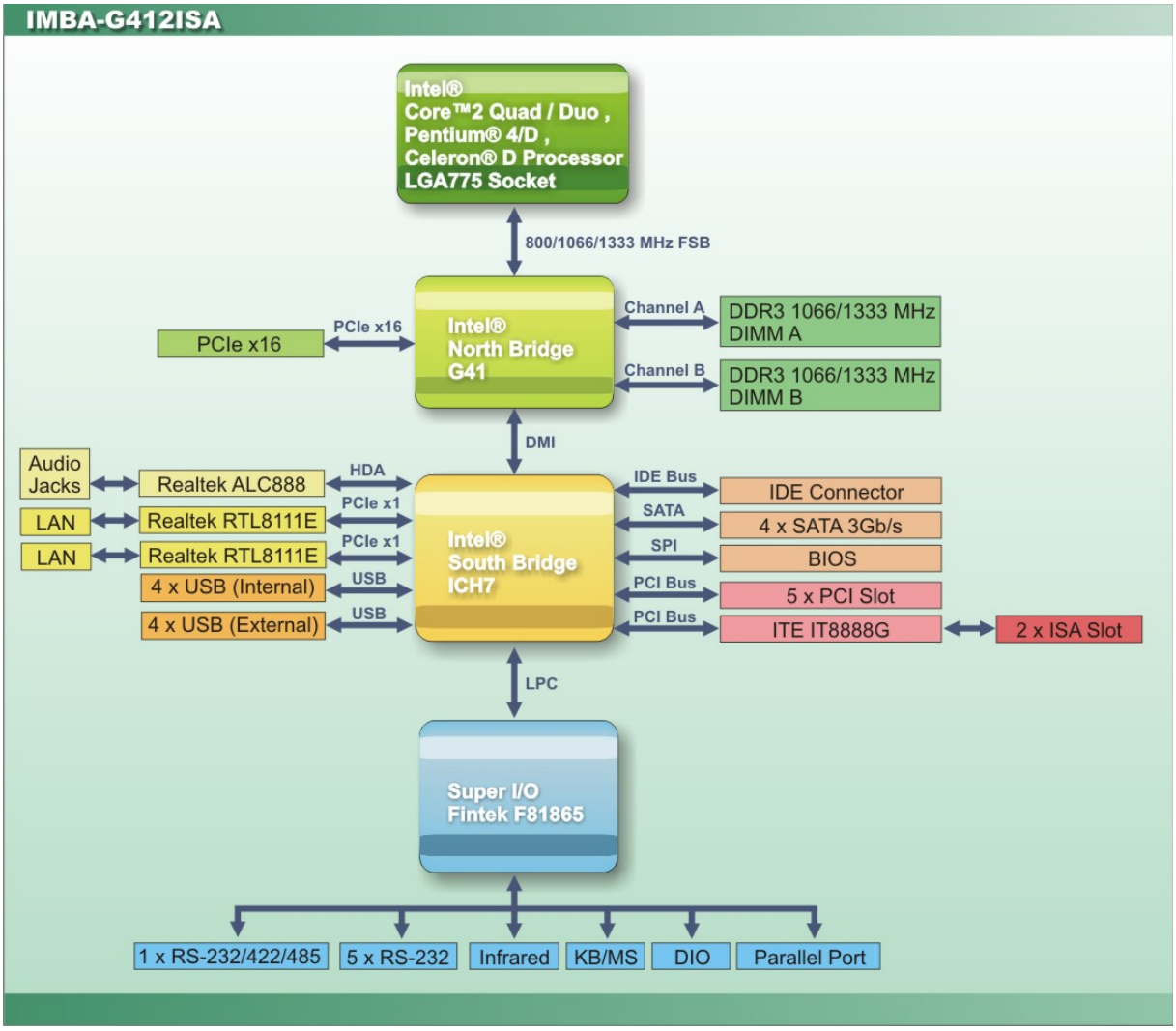

Figure 1-4: Data Flow Diagram

1.7 Technical Specifications

MXGG technical specifications are shown below.

Specifications	MXGG
Form Factor	ATX
CPU Supported	Socket LGA775 Intel® Core™2 Duo/Quad, Pentium® D or Celeron® processor
Front Side Bus (FSB)	800/1066/1333 MHz
Northbridge Chipset	Intel® G41
Memory	Two 240-pin 800/1066 MHz dual-channel DDR3 SDRAM DIMMs (system max. 4 GB)
Graphic Engine	Intel® GMA X4500
Integrated Graphics	VGA integrated in Intel® G41 supports up to 2048 x 1536 @ 75 MHz
Southbridge Chipset	Intel® ICH7
BIOS	UEFI BIOS
Digital I/O	8-bit, 4-bit input/4-bit output
Ethernet Controllers	Two Realtek RTL8111E PCIe GbE controllers (LAN1 with ASF2.0 support)
Audio	Realtek ALC888 HD Audio codec
Super I/O Controller	Fintek F81865
Watchdog Timer	Software programmable supports 1~255 sec. system reset
ISA Bridge	ITE IT8888
Expansion	One PCIe x16 socket Four PCI sockets One ISA socket One PCI/ISA socket

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I/O Interface	
Audio Jack	One line-in One line-out One mic-in
Fan connector	One 4-pin wafer for CPU fan Three 3-pin wafer for system fans
Keyboard/Mouse	Two external PS/2 connectors
Serial Ports	Five RS-232 COM connectors One RS-232/422/485 COM connector
USB 2.0/1.1 ports	Four internal via pin header Four external USB ports
Infrared	One infrared connector via 5-pin header
Parallel Port	One external parallel port
Serial ATA	Four independent SATA channels with 3.0 Gb/s data transfer rates
IDE	One 40-pin IDE connector
CompactFlash®	One CF Type II slot
SMBus	One 4-pin wafer SMBus connector
TPM	One TPM module connector via 20-pin header
Environmental and Power Specifications	
Power Supply	ATX power supported
Power Consumption	5 V @ 5.06 A 12 V @ 2.01 A 3.3 V @ 0.15 A -12 V @ 0.05 A (2.8 GHz Intel® Core 2 Duo E7400 with two 1 GB 1066 MHz DDR3 DIMMs)
Operating temperature	-10ºC ~ 60ºC, requires cooler and silicone heat sink paste
Humidity	5% ~ 95% (non-condensing)

Physical Specifications	
Dimensions	305 mm x 244 mm
Weight (Gross/Net)	1200 g / 750 g

Table 1-1: Technical Specifications

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Chapter

2

Packing List

2.1 Anti-static Precautions

WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- ***Wear an anti-static wristband***: Wearing an anti-static wristband can prevent electrostatic discharge.
- ***Self-grounding***: Touch a grounded conductor every few minutes to discharge any excess static buildup.
- ***Use an anti-static pad***: When configuring any circuit board, place it on an anti-static mat.
- ***Only handle the edges of the PCB***: Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

2.2 Unpacking Precautions

When the MXGG is unpacked, please do the following:

- Follow the antistatic guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

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2.3 Packing List

NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact a CyberResearch sales representative directly by sending an email to sales@cyberresearch.com.

The MXGG is shipped with the following components:

Quantity	Item and Part Number	Image
1	MXGG Series	
4	SATA cable	
1	Dual RS-232 cable	
1	Mini jumper pack (2.54mm)	
1	I/O shielding	

Quantity	Item and Part Number	Image
1	Utility DVD	
1	Quick Installation Guide	

Table 2-1: Packing List

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
CPU cooler kit	
CPU cooler kit	
CPU cooler	

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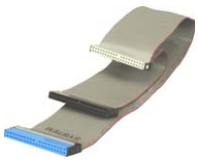
Item and Part Number	Image
ATA 66/100 flat cable	
USB cable	
SATA power cable	
DVI output SDVO card	
VGA output SDVO card	
Infineon TPM module	

Table 2-2: Optional Items

Chapter

3

Connectors

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3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

3.1.1 Layout

The figure below shows all the connectors and jumpers.

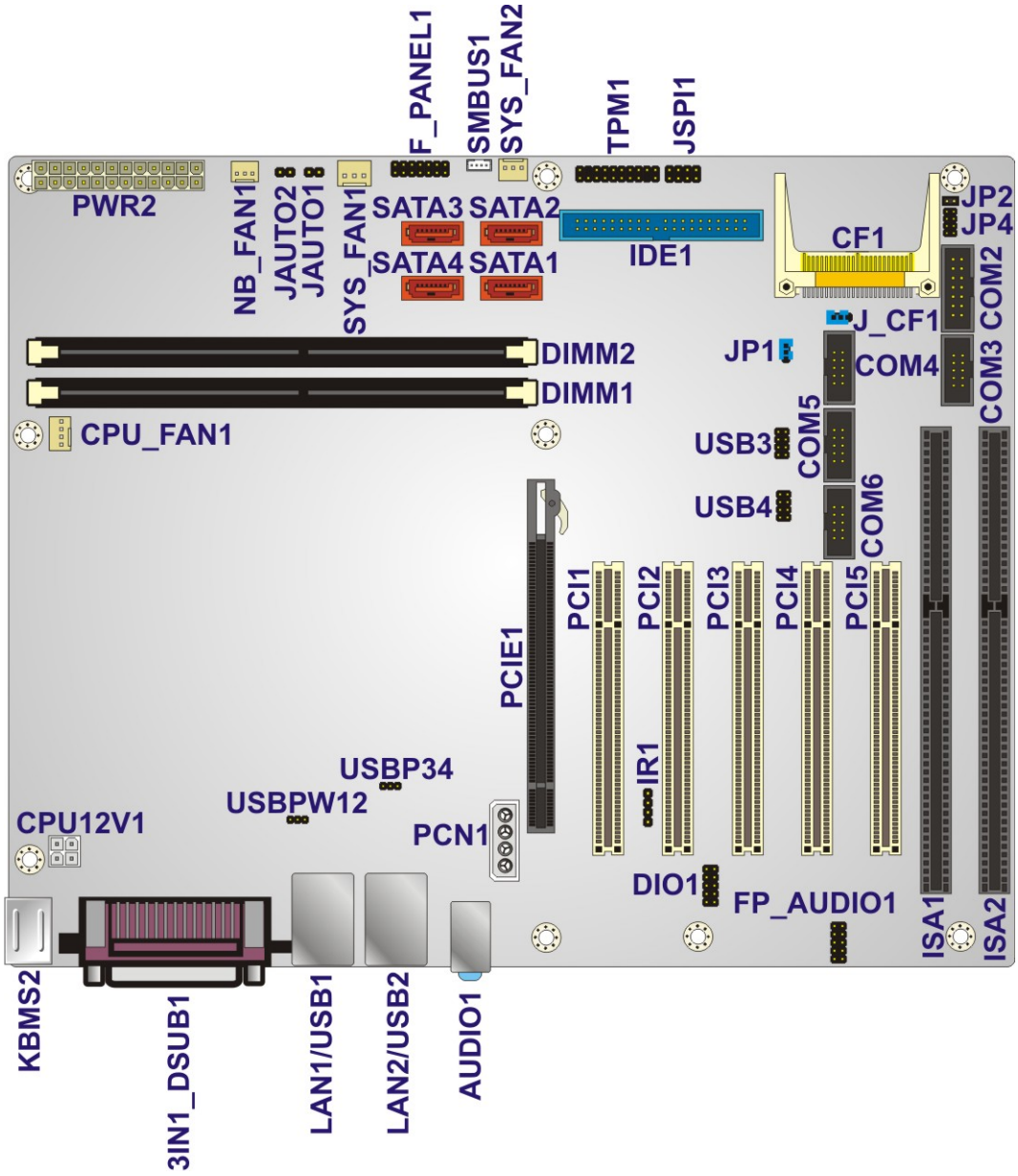

Figure 3-1: Connectors and Jumpers

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
Audio connector	10-pin header	FP_AUDIO1
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Fan connector (system)	3-pin wafer	NB_FAN1, SYS_FAN1, SYS_FAN2
CompactFlash® slot	CF Type II slot	CF1
CPU power input connector	4-pin connector	CPU12V1
Digital I/O connector	10-pin header	DIO1
Front panel connector	14-pin header	F_PANEL1
IDE connector	40-pin box header	IDE1
Infrared connector	5-pin header	IR1
ISA slots	ISA slot	ISA1, ISA2
Memory slot	240-pin DDR3 DIMM slot	DIMM1, DIMM2
PCI slots	PCI slot	PCI1, PCI2, PCI3, PCI4, PCI5
PCIe x16 slot	PCIe x16 slot	PCIE1
PCIe power connector	4-pin connector	PCN1
Power connector	24-pin connector	PWR2
RS-232 serial port connector	10-pin box header	COM3, COM4, COM5, COM6
RS-232/422/485 serial port connector	14-pin box header	COM2
SATA drive connectors	7-pin SATA drive connectors	SATA1, SATA2, SATA3, SATA4
SMBus connector	4-pin wafer	SMBUS1

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Connector	Type	Label
SPI Flash	8-pin header	JSPI1
TPM connector	20-pin header	TPM1
USB connectors	8-pin header	USB3, USB4

Table 3–1: Internal Peripheral Connectors

3.1.3 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
Audio connector	Audio jack	AUDIO1
Keyboard/Mouse connector	PS/2	KBMS2
LAN connector	RJ-45	LAN1, LAN2
Parallel port	DB-25 Female	3IN1_DSUB1A
Serial port connector	DB-9 Male	3IN1_DSUB1B
USB connector	USB port	USB1, USB2
VGA connector	15-pin Female	3IN1_DSUB1C

Table 3–2: External Peripheral Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the MXGG.

3.2.1 Audio Connector

CN Label: **FP_AUDIO1**

CN Type: 10-pin header

CN Location: See **Figure 3-2**

CN Pinouts: See **Table 3-3**

This connector connects to speakers, a microphone and an audio input.

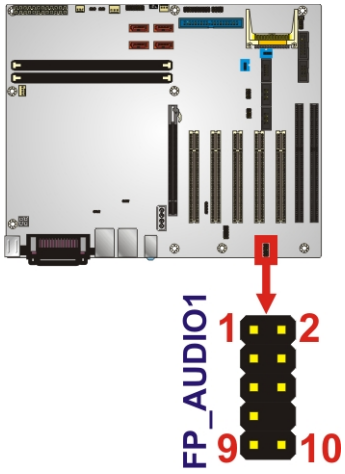

Figure 3-2: Audio Connector Location

Pin	Description	Pin	Description
1	MIC_L	2	Audio GND
3	MIC_R	4	FP_AUO_DETECT
5	LINE_R	6	PD
7	F_SENSE	8	NC
9	LINE_L	10	PD

Table 3-3: Audio Connector Pinouts

3.2.2 CPU Fan Connector

CN Label: **CPU_FAN1**

CN Type: 4-pin wafer

CN Location: See **Figure 3-3**

CN Pinouts: See **Table 3-4**

The fan connector attaches to a CPU cooling fan.

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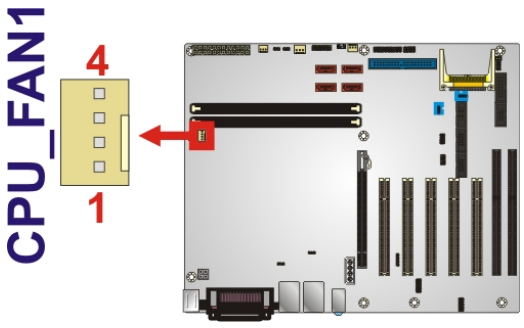

Figure 3-3: CPU Fan Connector Location

Pin	Description
1	GND
2	+12 V
3	Fan In
4	Fan Control

Table 3-4: CPU Fan Connector Pinouts

3.2.3 System Fan Connectors

CN Label: **NB_FAN1, SYS_FAN1 and SYS_FAN2**

CN Type: 3-pin wafer

CN Location: See **Figure 3-4**

CN Pinouts: See **Table 3-5** and **Table 3-6**

The fan connector attaches to a system cooling fan.

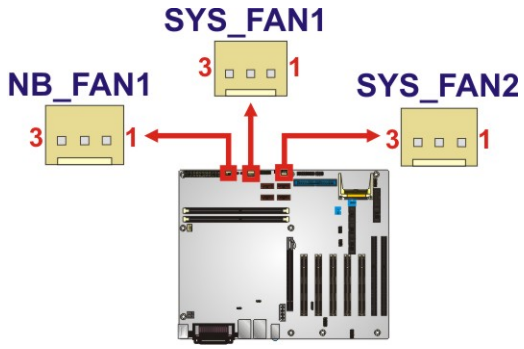

Figure 3-4: System Fan Connector Locations

Pin	Description
1	FANIN2
2	+12 V
3	GND

Table 3-5: System Fan Connector Pinouts (SYS_FAN1)

Pin	Description
1	NC
2	+12 V
3	GND

Table 3-6: System Fan Connector Pinouts (SYS_FAN2 and SYS_FAN3)

3.2.4 CPU Power Input Connector

CN Label: **CPU12V1**

CN Type: 4-pin connector

CN Location: See **Figure 3-5**

CN Pinouts: See **Table 3-7**

The CPU power input connector provides power to the CPU.

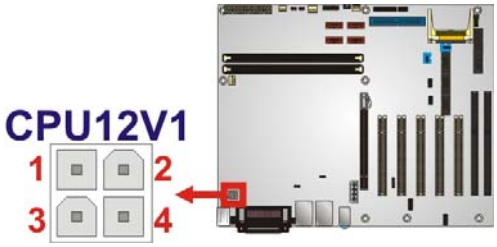

Figure 3-5: CPU Power Input Connector Location

Pin	Description
1	GND
2	GND
3	+12 V
4	+12 V

Table 3-7: CPU Power Input Connector Pinouts

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3.2.5 Digital I/O Connector

CN Label: **DIO1**

CN Type: 10-pin header

CN Location: See **Figure 3-6**

CN Pinouts: See **Table 3-8**

The digital I/O connector provides programmable input and output for external devices. The digital I/O provides 4-bit output and 4-bit input.

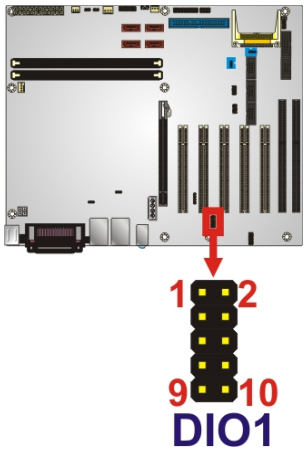

Figure 3-6: Digital I/O Connector Location

Pin	Description	Pin	Description
1	GND	2	VCC5S
3	Output 0	4	Output 1
5	Output 2	6	Output 3
7	Input 0	8	Input 1
9	Input 2	10	Input 3

Table 3-8: Digital I/O Connector Pinouts

3.2.6 Front Panel Connector

CN Label: **F_PANEL1**

CN Type: 14-pin header

CN Location: See **Figure 3-7**

CN Pinouts: See **Table 3-9**

The front panel connector connects to the indicator LEDs and buttons on the computer's front panel.

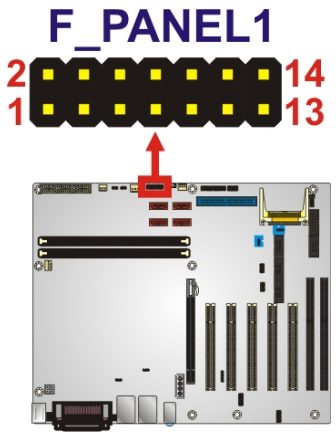

Figure 3-7: Front Panel Connector Location

FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
Power LED	1	Power LED	Buzzer	2	BEEP_PWR
	3	NC		4	NC
	5	GND		6	NC
Power	7	PWRBTSW#		8	PC_BEEP
Button	9	GND	--	10	NC
HDD LED	11	HDD LED+	Reset	12	RESET
	13	HDD LED-		14	GND

Table 3-9: Front Panel Connector Pinouts

3.2.7 IDE Connector

CN Label: **IDE1**

CN Type: 40-pin box header (2x20)

CN Location: See **Figure 3-8**

CN Pinouts: See **Table 3-10**

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The IDE connector can connect to an IDE hard drive or optical device.

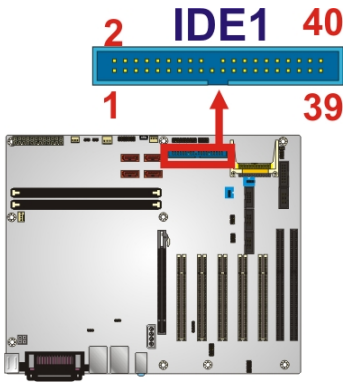

Figure 3-8: IDE Connector Location

Pin	Description	Pin	Description
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND–DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

Table 3-10: IDE Connector Pinouts

3.2.8 Infrared Interface Connector

CN Label: **IR1**

CN Type: 5-pin header (1x5)

CN Location: See **Figure 3-9**

CN Pinouts: See **Table 3-11**

The infrared connector attaches to an infrared receiver for use with remote controls.

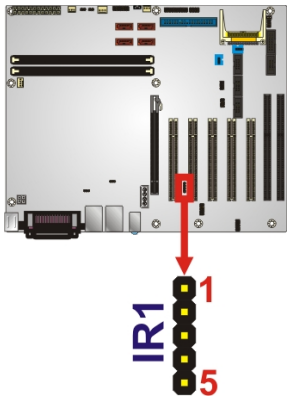

Figure 3-9: Infrared Connector Location

Pin	Description
1	+5V
2	NC
3	IR-RX
4	GND
5	IR-TX

Table 3-11: Infrared Connector Pinouts

3.2.9 Memory Slot

CN Label: **DIMM1, DIMM2**

CN Type: DIMM slot

CN Location: See **Figure 3-10**

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The DIMM slots are for DDR3 DIMM memory modules.

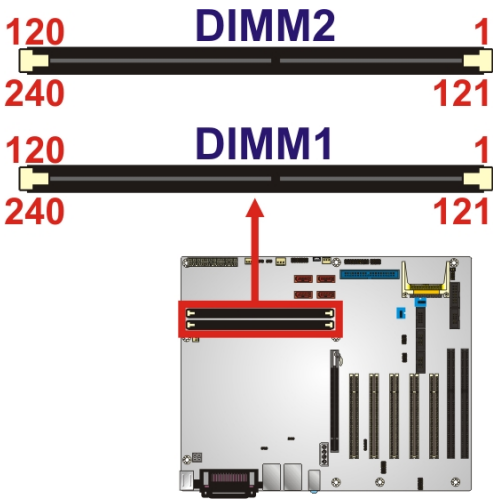

Figure 3-10: Memory Card Slot Location

3.2.10 PCIe Power Input Connector

CN Label:	**PNC1**
CN Type:	3-pin wafer (1x3)
CN Location:	See **Figure 3-11**
CN Pinouts:	See **Table 3-12**

The PCIe power input connector provides extra power to the PCIe card.

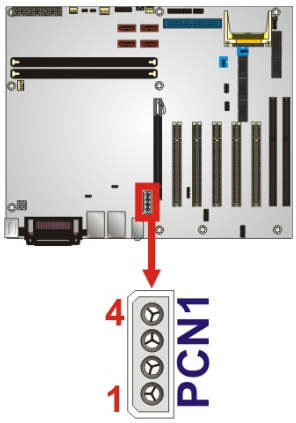

Figure 3-11: PCIe Power Input Connector Location

Pin	Description
1	VCC +5 V
2	GND
3	GND
4	VCC +12 V

Table 3-12: PCIe Power Input Connector Pinouts

3.2.11 Power Connector

CN Label: **PWR2**

CN Type: 24-pin connector

CN Location: See **Figure 3-12**

CN Pinouts: See **Table 3-13**

The power connector connects to an ATX power supply.

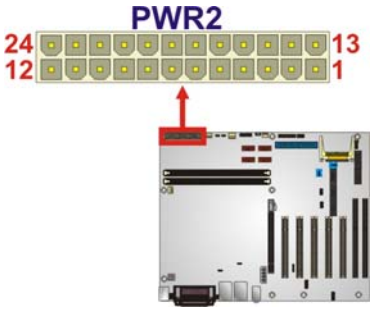

Figure 3-12: Power Connector Location

Pin	Description	Pin	Description
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON-
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	NC	20	NC

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Pin	Description	Pin	Description
9	+5V	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

Table 3-13: Power Connector Pinouts

3.2.12 RS-232 Serial Port Connectors

CN Label: **COM3, COM4, COM5, COM6**

CN Type: 10-pin box header

CN Location: See **Figure 3-13**

CN Pinouts: See **Table 3-14**

This connector provides RS-232 communications.

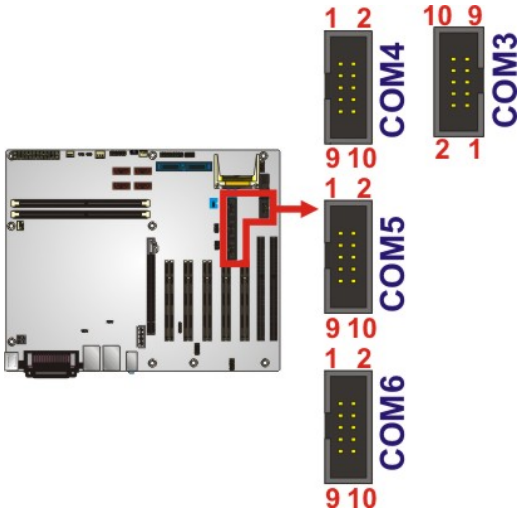

Figure 3-13: Serial Port Connector Locations

Pin	Description
1	NRLSD
2	NDSR
3	NRX
4	NRTS

Pin	Description
5	NTX
6	NCTS
7	NDTR
8	NRI
9	GND
10	NC

Table 3-14: Serial Port Connector Pinouts

3.2.13 RS-232/422/485 Serial Port Connector

CN Label: **COM2**

CN Type: 14-pin box header

CN Location: See **Figure 3-14**

CN Pinouts: See **Table 3-15**

This connector provides RS-232, RS-422 or RS-485 communications.

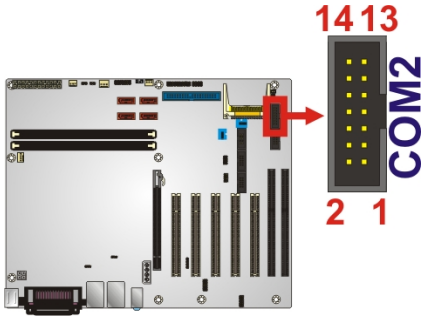

Figure 3-14: RS-232/422/485 Serial Port Connector Location

Pin	Description	Pin	Description
1	NDDVD	2	NDSR
3	NRX	4	NRTS
5	NTX	6	NCTS
7	NDTR	8	NRI
9	GND	10	NC

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Pin	Description	Pin	Description
11	TX+	12	TX-
13	RX+	14	RX-

Table 3-15: RS-232/422/485 Serial Port Connector Pinouts

3.2.14 SATA Drive Connectors

CN Label: **SATA1, SATA2, SATA3, SATA4**

CN Type: 7-pin SATA drive connectors

CN Location: See **Figure 3-15**

The SATA drive connectors can be connected to SATA 3Gb/s drives.

Figure 3-15: SATA Drive Connector Location

3.2.15 SMBus Connector

CN Label: **SMBUS1**

CN Type: 4-pin wafer

CN Location: See **Figure 3-16**

CN Pinouts: See **Table 3-16**

The SMBus (System Management Bus) connector provides low-speed system management communications.

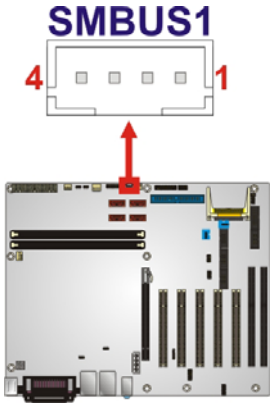

Figure 3-16: SMBus Connector Locations

Pin	Description
1	GND
2	SMBDATA
3	SMBCLK
4	+5V

Table 3-16: SMBus Connector Pinouts

3.2.16 SPI Flash Connector

CN Label: **JSPI1**

CN Type: 8-pin header

CN Location: See **Figure 3-17**

CN Pinouts: See **Table 3-17**

The 8-pin SPI Flash connector is used to flash the BIOS.

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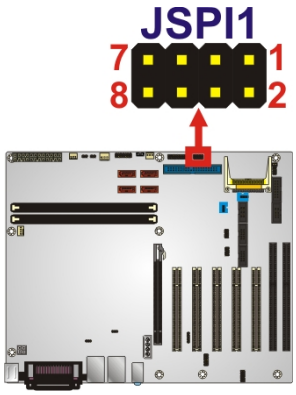

Figure 3-17: SPI Flash Connector

Pin	Description	Pin	Description
1	+3.3V	2	GND
3	CS#	4	CLOCK
5	SO	6	SI
7	NC	8	NC

Table 3-17: SPI Flash Connector

3.2.17 TPM Connector

CN Label: **TPM1**

CN Type: 20-pin header (2x10)

CN Location: See **Figure 3-18**

CN Pinouts: See **Table 3-18**

The Trusted Platform Module (TPM) connector secures the system on bootup.

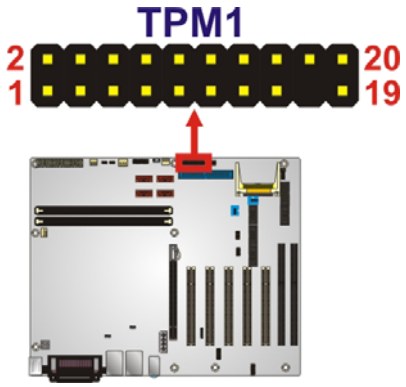

Figure 3-18: TPM Connector Pinout Location

Pin	Description	Pin	Description
1	TPMCLK	2	GND
3	LFRAME-	4	NC
5	PCIRST4-	6	+5 V
7	LAD3	8	LAD2
9	LAD0	10	LAD1
11	GND	12	GND
13	SMBCLK_MAIN	14	SMBDATA_MAIN
15	+3.3 V	16	SERIRQ
17	GND	18	CLKRUN-
19	+3.3 V	20	LDRQ-

Table 3-18: TPM Connector Pinouts

3.2.18 USB Connectors

CN Label: **USB3, USB4**

CN Type: 8-pin header

CN Location: See **Figure 3-19**

CN Pinouts: See **Table 3-19**

The USB connectors connect to USB devices. Each pin header provides two USB ports.

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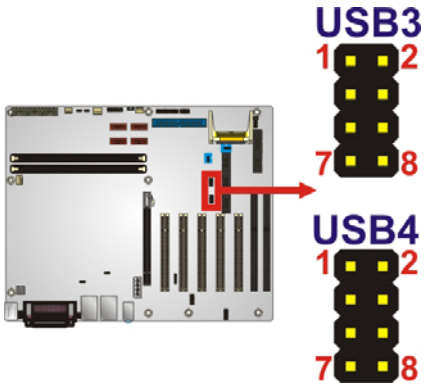

Figure 3-19: USB Connector Pinout Locations

Pin	Description	Pin	Description
1	+5V	2	GND
3	USBP4/6#	4	USBP5/7
5	USBP4/6	6	USBP5/7#
7	GND	8	+5V

Table 3-19: USB Port Connector Pinouts

3.3 External Peripheral Interface Connector Panel

The figure below shows the external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

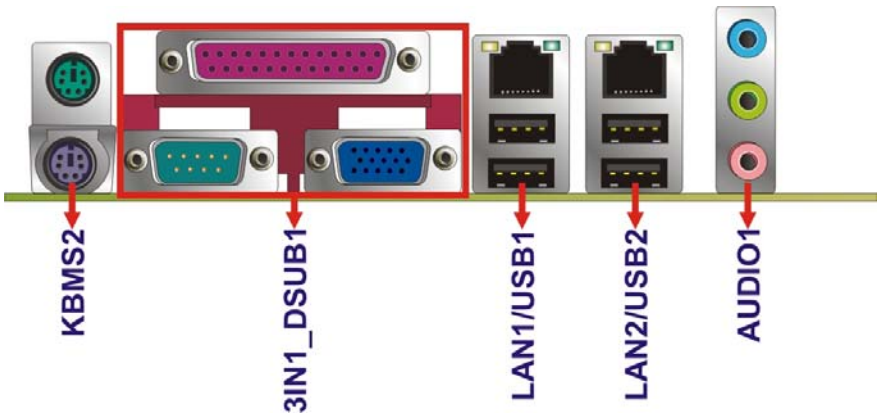

Figure 3-20: External Peripheral Interface Connector

3.3.1 Audio Connectors

CN Label: **AUDIO1**

CN Type: Audio jacks

CN Location: See **Figure 3-20**

The audio jacks connect to external audio devices.

- **Line In port (Light Blue):** Connects a DVD-ROM, DVD player, or other audio devices.
- **Line Out port (Lime):** Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.
- **Microphone (Pink):** Connects a microphone.

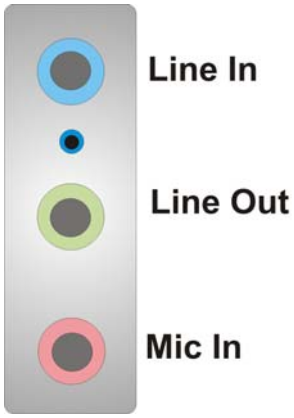

Figure 3-21: Audio Connector

3.3.2 Keyboard/Mouse Connector

CN Label: **KBMS2**

CN Type: PS/2

CN Location: See **Figure 3-20**

CN Pinouts: See **Table 3-20**, **Figure 3-22**

The keyboard and mouse connector is a standard PS/2 connector.

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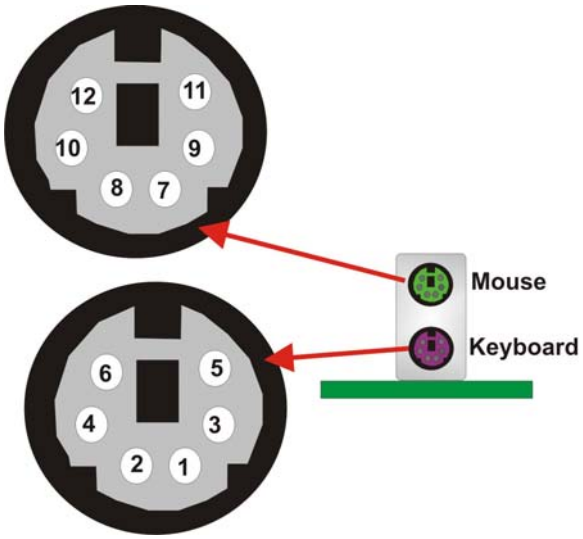

Figure 3-22: PS/2 Pinout and Configuration

Pin	Description	Pin	Description
1	KB_DATA	8	NC
2	NC	9	GND
3	GND	10	5 V
4	5 V	11	MS_CLK
5	KB_CLK	12	NC
6	NC	13	KB_GND
7	MS_DATA	14	KB_GND

Table 3-20: Keyboard Connector Pinouts

3.3.3 LAN Connectors

CN Label: **LAN1, LAN2**

CN Type: RJ-45

CN Location: See **Figure 3-20**

CN Pinouts: See **Table 3-21**

The LAN connector connects to a local network.

Pin	Description	Pin	Description
1	3.3 V	8	LAN1/2_MDI3+
2	LAN1/2_MDI0+	9	LAN1/2_MDI3-
3	LAN1/2_MDI0-	10	GND
4	LAN1/2_MDI1+	11	LAN1/2_LINK100
5	LAN1/2_MDI1-	12	LAN1/2_LINK1000
6	LAN1/2_MDI2+	13	LAN1/2_LED0
7	LAN1/2_MDI2-	14	3.3 V

Table 3-21: LAN Pinouts

3.3.4 Parallel Port Connector

CN Label: **3IN1_DSUB1A**

CN Type: DB-25 Female

CN Location: See **Figure 3-20**

CN Pinouts: See **Table 3-22**

The parallel port connects to parallel port device, typically a printer.

Pin	Description	Pin	Description
1	STROBE#	14	AUTO FORM FEED #
2	DATA 0	15	ERROR#
3	DATA 1	16	INITIALIZE
4	DATA 2	17	PRINTER SELECT LN#
5	DATA 3	18	GROUND
6	DATA 4	19	GROUND
7	DATA 5	20	GROUND
8	DATA 6	21	GROUND
9	DATA 7	22	GROUND
10	ACKNOWLEDGE	23	GROUND
11	BUSY	24	GROUND
12	PAPER EMPTY	25	GROUND

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Pin	Description	Pin	Description
13	PRINTER SELECT		

Table 3-22: Parallel Port Connector Pinouts

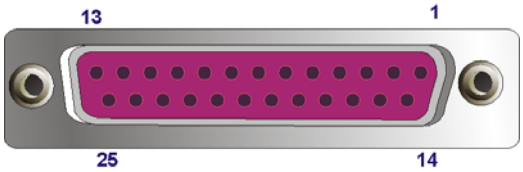

Figure 3-23: Parallel Port Connector Location

3.3.5 Serial Port Connector (COM1)

CN Label: **3IN1_DSUB1B (COM1)**

CN Type: DB-9 Male

CN Location: See **Figure 3-20**

CN Pinouts: See **Table 3-23** and **Figure 3-24**

The serial port connects to a RS-232 serial communications device.

Pin	Description	Pin	Description
1	DDVD	6	DSR
2	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RI
5	GND		

Table 3-23: Serial Port Pinouts

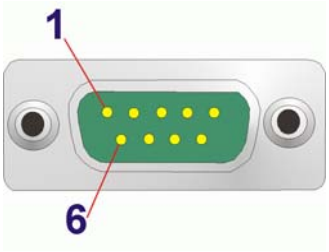

Figure 3-24: Serial Port Pinouts

3.3.6 USB Connectors

CN Label: **USB1, USB2**

CN Type: USB port

CN Location: See **Figure 3-20**

CN Pinouts: See **Table 3-24**

The USB connector can be connected to a USB device.

Pin	Description	Pin	Description
1	USBPWR1	2	USBP0/2-
3	USBP0/2+	4	GND
5	USBPWR1	6	USBP1/3-
7	USBP1/3+	8	GND

Table 3-24: USB Port Pinouts

3.3.7 VGA Connector

CN Label: **3IN1_DSUB1C**

CN Type: 15-pin Female

CN Location: See **Figure 3-20**

CN Pinouts: See **Figure 3-25** and **Table 3-25**

The VGA connector connects to a monitor that accepts a standard VGA input.

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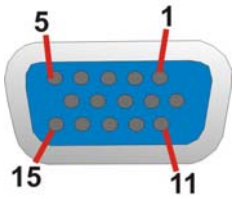

Figure 3-25: VGA Connector

Pin	Description	Pin	Description
1	RED	2	GREEN
3	BLUE	4	CRT_PLUG#
5	GND	6	GND
7	GND	8	GND
9	VGAVCC	10	GND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-25: VGA Connector Pinouts

Chapter

4

Installation

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4.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the MXGG may result in permanent damage to the MXGG and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the MXGG. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the MXGG or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the MXGG, place it on an antic-static pad. This reduces the possibility of ESD damaging the MXGG.
- ***Only handle the edges of the PCB***: When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before installation. All installation notices must be strictly adhered to. Failing to adhere to these precautions may lead to severe damage and injury to the person performing the installation.

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
  - The user manual provides a complete description of the MXGG installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the MXGG on an antistatic pad:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the MXGG off:
  - When working with the MXGG, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the MXGG **DO NOT:**

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

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4.3 Basic Installation

This section outlines the parts that must be installed for the system to function correctly.

4.3.1 CPU Installation

NOTE:

To enable Hyper-Threading, the CPU and chipset must both support it.

WARNING:

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

The LGA775 socket is shown in **Figure 4-1**.

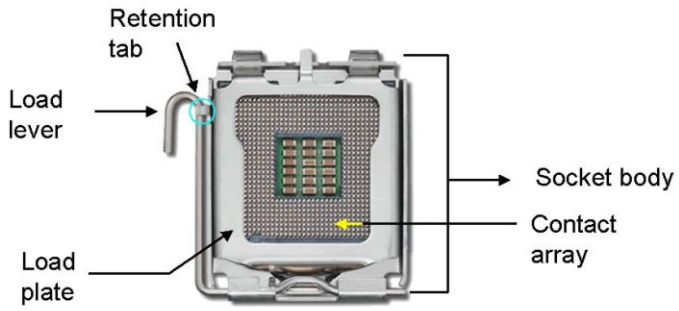

Figure 4-1: Intel LGA775 Socket

To install the CPU, follow the steps below.

WARNING:

DO NOT touch the pins at the bottom of the CPU. When handling the CPU, only hold it on the sides.

Step 1: **Remove the protective cover.** The black protective cover can be removed by pulling up on the tab labeled "Remove". See **Figure 4-2**.

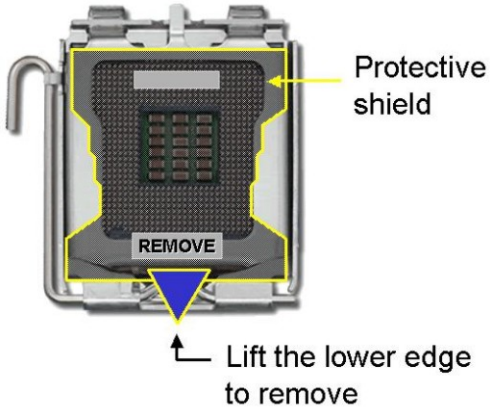

Figure 4-2: Remove Protective Cover

Step 2: **Open the socket**. Disengage the load lever by pressing the lever down and slightly outward to clear the retention tab. Fully open the lever, then open the load plate. See **Figure 4-3**.

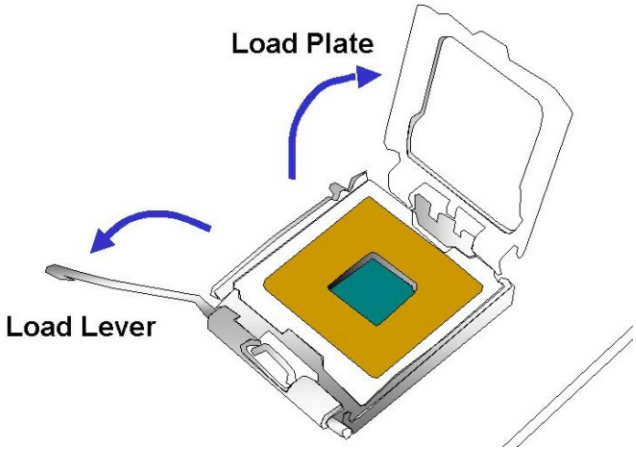

Figure 4-3: CPU Socket Load Plate

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Step 3: **Inspect the CPU socket.** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.

Step 4: **Orientate the CPU properly.** The contact array should be facing the CPU socket.

Step 5: **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket.

Step 6: **Align the CPU pins.** Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.

Step 7: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly. See **Figure 4-4**.

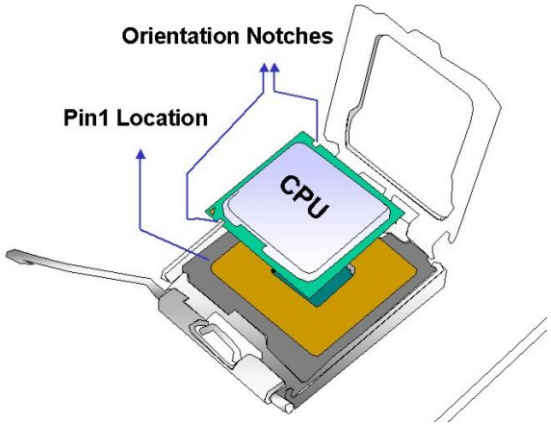

Figure 4-4: Insert the Socket LGA775 CPU

Step 8: **Close the CPU socket.** Close the load plate and engage the load lever by pushing it back to its original position. There will be some resistance, but will not require extreme pressure.

Step 9: **Connect the 12 V power to the board.** Connect the 12 V power from the power supply to the board.

4.3.2 Cooling Kit Installation

WARNING:

DO NOT use the original Intel® heat sink and fan. A proprietary one is recommended.

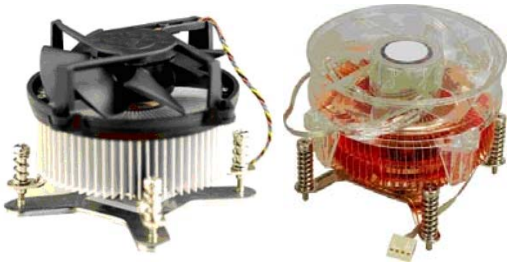

Figure 4-5: Cooling Kits

The cooling kit can be purchased from CyberResearch, Inc.; cooling kits include a heatsink and fan.

WARNING:

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the cooling kit, follow the instructions below.

Step 1: **Place the cooling kit onto the socket LGA775 CPU**. Make sure the CPU cable can be properly routed when the cooling kit is installed.

Step 2: **Properly align the cooling kit**. Make sure the four spring screw fasteners can pass through the pre-drilled holes on the PCB.

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Step 3: **Mount the cooling kit**. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the predrilled holes on the bottom of the PCB.

Step 4: **Secure the cooling kit**. From the solder side of the PCB, align the support bracket to the screw threads on heat sink that were inserted through the PCB holes. (See **Figure 4-6**)

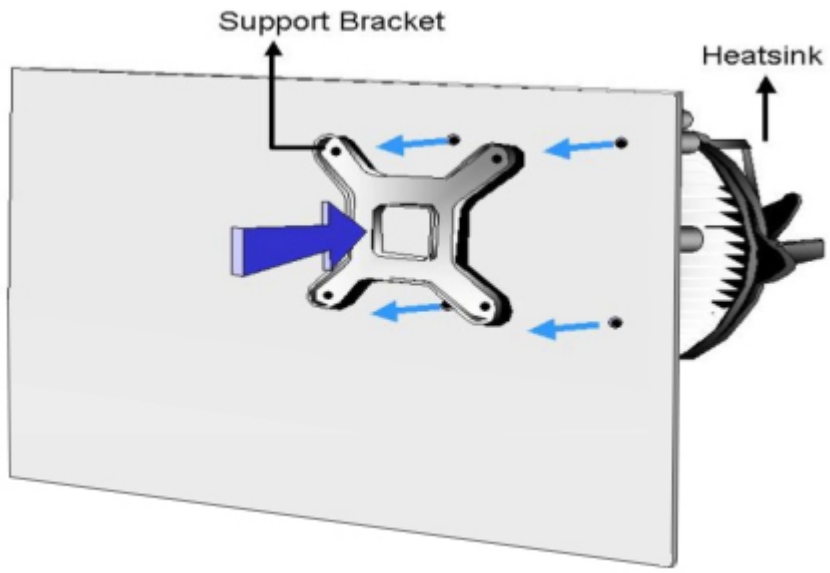

Figure 4-6: Securing the Heat sink to the MXGG

Step 5: **Tighten the screws**. Use a screwdriver to tighten the four screws. Tighten each nut a few turns at a time and do not over-tighten the screws.

Step 6: **Connect the fan cable**. Connect the cooling kit fan cable to the fan connector on the MXGG. Carefully route the cable and avoid heat generating chips and fan blades.

4.3.3 DIMM Installation

To install a DIMM, please follow the steps below and refer to **Figure 4-7**.

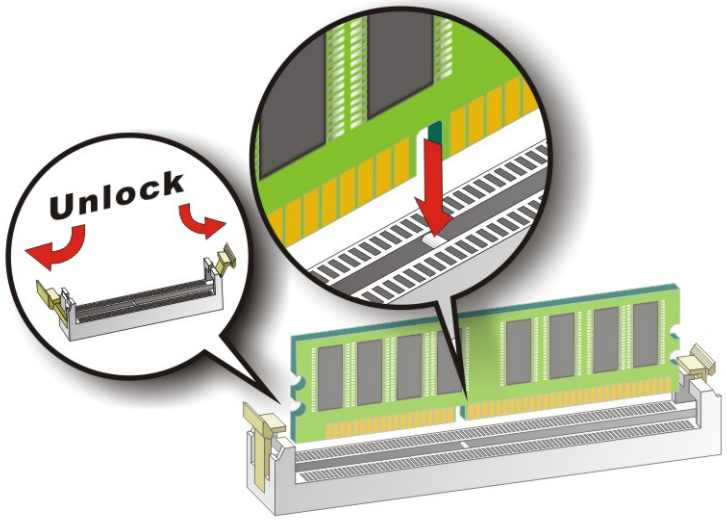

Figure 4-7: DIMM Installation

Step 1: **Open the DIMM socket handles**. Open the two handles outwards as far as they possible. See **Figure 4-7**.

Step 2: **Align the DIMM with the socket**. Align the DIMM so the notch lines up with the notch on the memory socket. See **Figure 4-7**.

Step 3: **Insert the DIMM**. Once aligned, press down until the DIMM is properly seated. Clip the two handles into place. See **Figure 4-7**.

Step 4: **Removing a DIMM**. To remove a DIMM, push both handles outward. The memory module is ejected.

4.3.4 Motherboard Installation

To install the MXGG motherboard into the chassis please refer to the reference material that came with the chassis.

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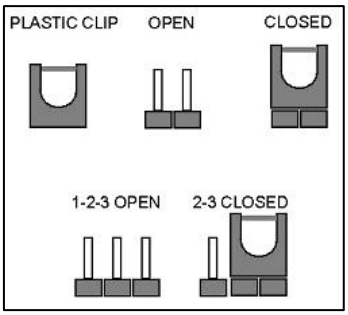
4.4 Jumper Settings

NOTE:



A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

The MXGG includes some jumpers shown in **Table 4-1**.

Description	Label	Type
AT/ATX power select jumpers	JAUTO1, JAUTO2	2-pin header
Clear CMOS jumper	JP1	3-pin header
COM2 function select jumper	JP4	6-pin header
CompactFlash® setup	JP2	2-pin header
CF voltage select jumper	J_CF1	3-pin header
USB power select jumpers	USBPW12, USBP34	3-pin header

Table 4-1: Jumpers

4.4.1 AT/ATX Power Select Jumpers

Jumper Label: **JAUTO1, JAUTO2**

Jumper Type: 2-pin header

Jumper Settings: See **Table 4-2**

Jumper Location: See **Figure 4-8**

The AT Power Select jumper specifies the systems power mode as AT or ATX.

Setting	Description
Open	Use ATX power (Default)
Short	Use AT power

Table 4-2: AT/ATX Power Select Jumper Settings

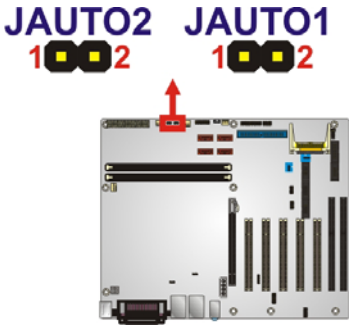


Figure 4-8: AT/ATX Power Select Jumper Location

4.4.2 Clear CMOS Jumper

Jumper Label: **JP1**

Jumper Type: 3-pin header

Jumper Settings: See **Table 4-3**

Jumper Location: See **Figure 4-9**

To reset the BIOS, move the jumper to the "Clear BIOS" position for 3 seconds or more, and then move back to the default position.

Pin	Description
Short 1-2	Normal (Default)
Short 2-3	Clear BIOS

Table 4-3: Clear BIOS Jumper Settings

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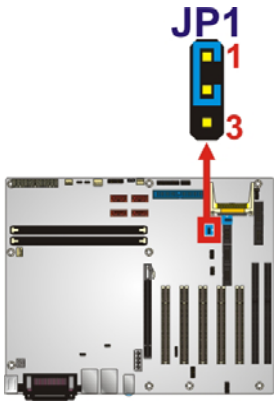

Figure 4-9: Clear BIOS Jumper Location

4.4.3 COM 2 Function Select Jumper

Jumper Label: **JP4**

Jumper Type: 6-pin header

Jumper Settings: See Table 4-4

Jumper Location: See Figure 4-10

The COM 2 Function Select jumper sets the communication protocol used by the second serial communications port (COM 2) as RS-232, RS-422 or RS-485. The COM 2 Function Select settings are shown in **Table 4-4**.

Setting	Description
Short 1-2	RS-232 (Default)
Short 3-4	RS-422
Short 5-6	RS-485

Table 4-4: COM 2 Function Select Jumper Settings

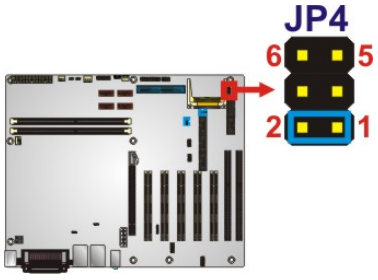

Figure 4-10: COM 2 Function Select Jumper Location

4.4.4 CompactFlash® Setup

Jumper Label: **JP2**

Jumper Type: 2-pin header

Jumper Settings: See Table 4-5

Jumper Location: See Figure 4-11

The CompactFlash® slot is connected through an IDE connection. This jumper sets the CompactFlash® card as the master or slave IDE device.

Setting	Description
Short	Master (Default)
Open	Slave

Table 4-5: CompactFlash® Setup Jumper Settings

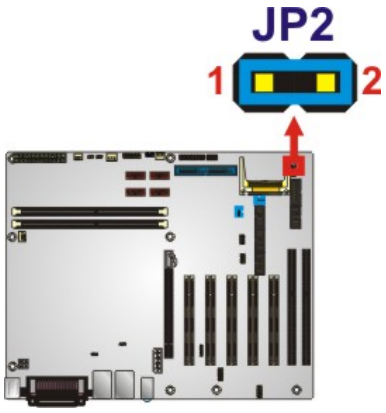

Figure 4-11: CompactFlash® Setup Jumper Location

4.4.5 CF Voltage Select Jumper

Jumper Label: **J_CF1**

Jumper Type: 3-pin header

Jumper Settings: See Table 4-6

Jumper Location: See Figure 4-12

The CF voltage select jumper sets the voltage of the CompactFlash® slot.

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Setting	Description
Short 1-2	+5.0 V
Short 2-3	+3.3 V

Table 4-6: LDVD Voltage Selection Jumper Settings

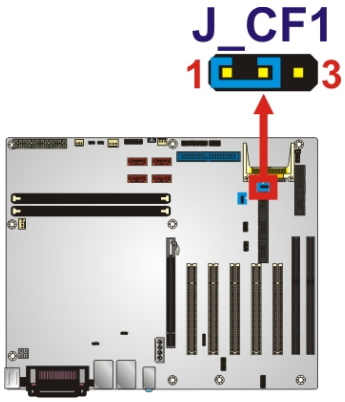

Figure 4-12: LDVD Voltage Selection Jumper Location

4.4.6 USB Power Select Jumpers

Jumper Label: **USBPW12, USBP34**

Jumper Type: 3-pin header

Jumper Settings: See **Table 4-7**

Jumper Location: See **Figure 4-13**

The USB Power Select jumper specifies the USB power.

Setting	Description
Short 1-2	+5 V (Default)
Short 2-3	+5VSB

Table 4-7: USB Power Select Jumper Settings

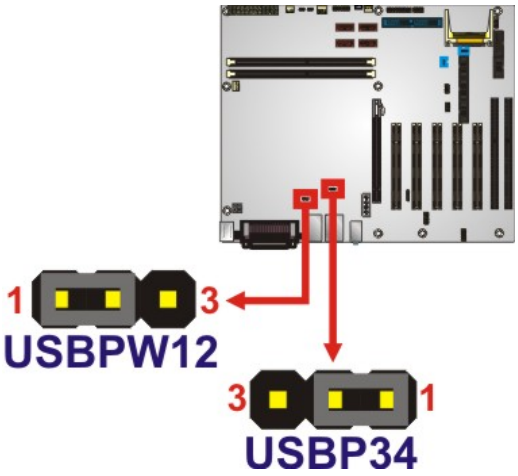

Figure 4-13: USB Power Select Jumper Location

4.5 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the onboard connectors.

4.5.1 SATA Drive Connection

The MXGG is shipped with two SATA drive cables and one SATA drive power cable. To connect the SATA drives to the connectors, please follow the steps below.

Step 1: **Locate the connectors**.

Step 2: **Insert the cable connector**. Press the clip on the connector at the end of the SATA cable and insert the cable connector into the on-board SATA drive connector. See **Figure 4-14**.

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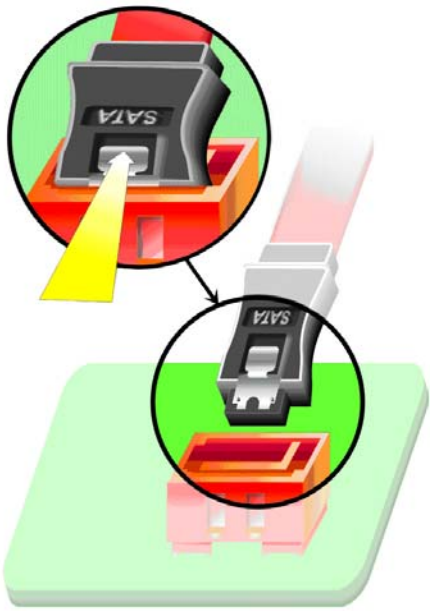

Figure 4-14: SATA Drive Cable Connection

Step 3: **Connect the cable to the SATA disk**. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 4-15**.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See **Figure 4-15**.

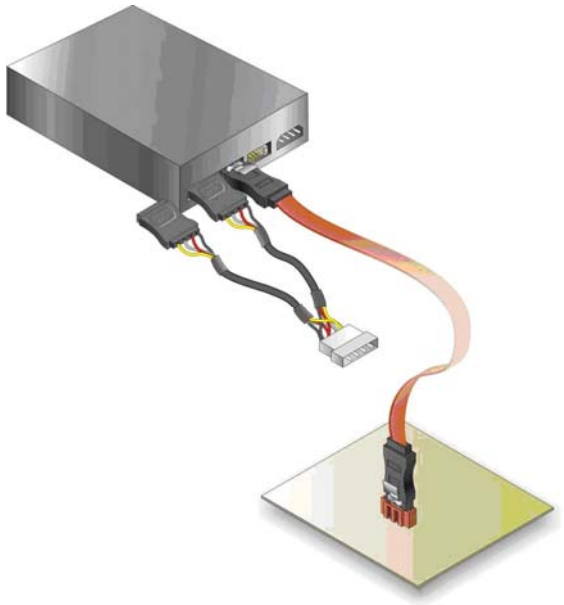

Figure 4-15: SATA Power Drive Connection

4.5.2 Dual RS-232 Cable with Slot Bracket

The dual RS-232 cable slot connector consists of two connectors attached to two independent cables. Each cable is then attached to a D-sub 9 male connector that is mounted onto a slot. To install the dual RS-232 cable, please follow the steps below.

Step 1: **Locate the connectors**. The locations of the RS-232 connectors are shown in **Chapter 3**.

Step 2: **Insert the cable connectors**. Insert one connector into each serial port box headers. See Figure 4-16. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

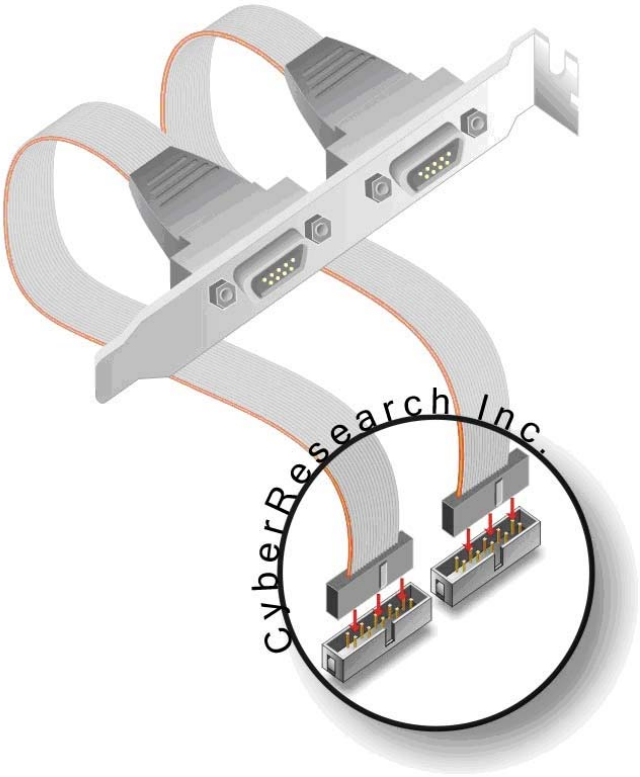

Figure 4-16: Dual RS-232 Cable Installation

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Step 3: **Secure the bracket**. The dual RS-232 connector has two D-sub 9 male connectors secured on a bracket. To secure the bracket to the chassis please refer to the reference material that came with the chassis.

4.6 External Peripheral Interface Connection

This section describes connecting devices to the external connectors on the MXGG.

4.6.1 Audio Connector

The audio jacks on the external audio connector enable the MXGG to be connected to a stereo sound setup. To install the audio devices, follow the steps below.

Step 1: **Identify the audio jacks**. The jacks on your home theater system or speakers may not match the colors on the rear panel. Please review the connection options carefully.

Step 2: **Plug the audio cables into the audio jacks**. Plug the audio cables into the audio jacks. If the plugs on your speakers are different, an adapter will need to be used to plug them into the audio jacks.

- **Line In port (Light Blue):** Connects a DVD-ROM, DVD player, or other audio devices.
- **Line Out port (Lime):** Connects to a headphone or a speaker.
- **Microphone (Pink):** Connects to a microphone.

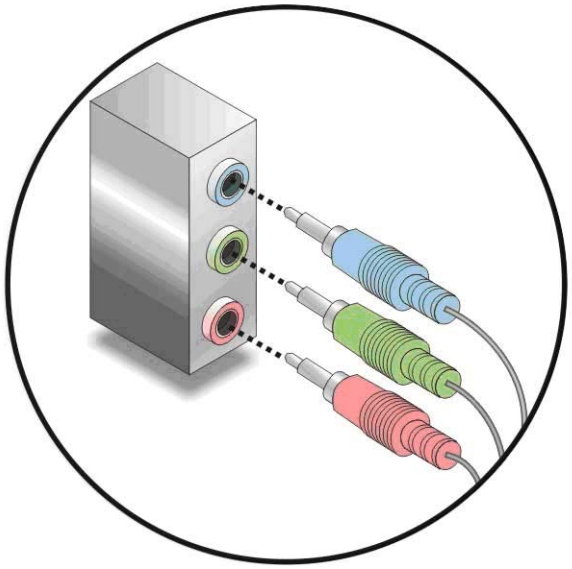

Figure 4-17: Audio Connector

Step 3: **Check audio clarity**. Check that the sound is coming through the right speakers by adjusting the balance front to rear and left to right.

4.6.2 PS/2 Keyboard and Mouse Connection

The MXGG has a dual PS/2 connector on the external peripheral interface panel. The dual PS/2 connector is used to connect to a keyboard and mouse to the system. Follow the steps below to connect a keyboard and mouse to the MXGG.

Step 1: **Locate the dual PS/2 connector**. The location of the dual PS/2 connector is shown in **Chapter 3**.

Step 2: **Insert the keyboard/mouse connector**. Insert a PS/2 keyboard or mouse connector into the appropriate PS/2 connector on the external peripheral interface connector. See Figure 4-18.

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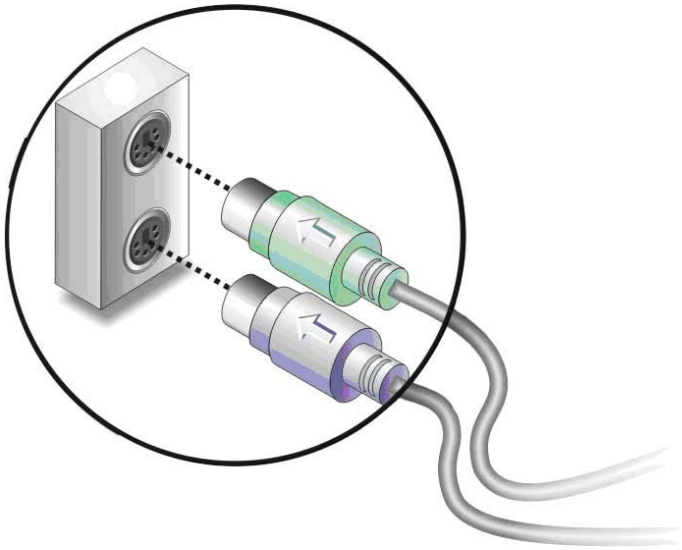

Figure 4-18: PS/2 Keyboard/Mouse Connector

4.6.3 LAN Connection

There are two external RJ-45 LAN connectors. The RJ-45 connectors enable connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors**. The locations of the USB connectors are shown in **Chapter 4**.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the MXGG. See **Figure 4-19**.

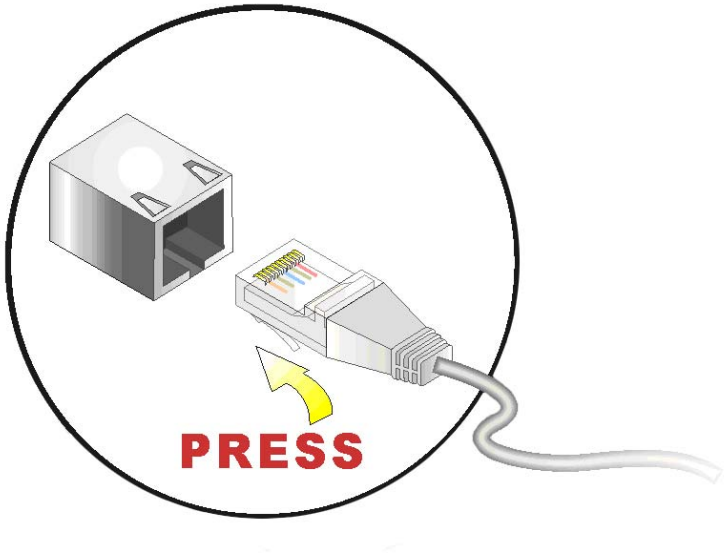

Figure 4-19: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector.

4.6.4 Parallel Device Connection

The MXGG has a single female DB-25 connector on the external peripheral interface panel for parallel devices. Follow the steps below to connect a parallel device to the MXGG.

Step 1: **Locate the DB-25 connector**. The location of the DB-25 connector is shown in **Chapter 3**.

Step 2: **Insert the DB-25 connector**. Insert the DB-25 connector of a parallel device into the DB-25 connector on the external peripheral interface. See Figure 4-20.

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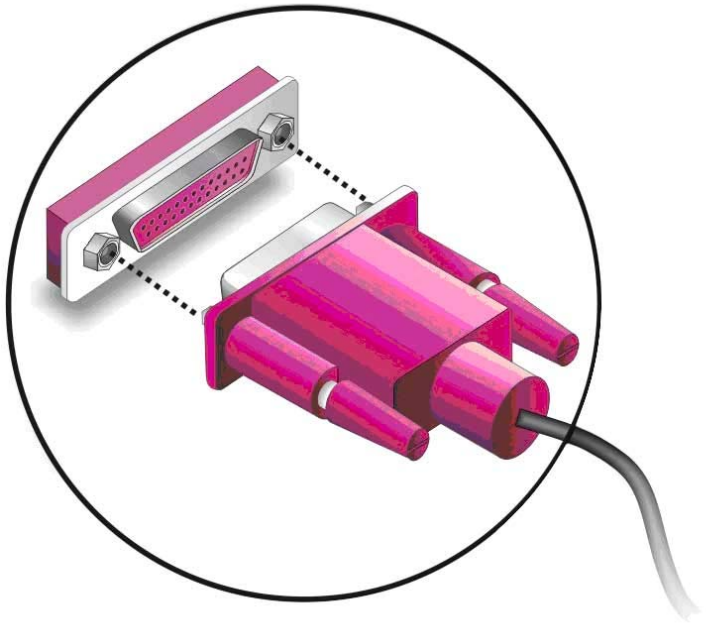

Figure 4-20: Parallel Device Connector

Step 3: **Secure the connector**. Secure the DB-25 connector to the external interface by tightening the two retention screws on either side of the connector.

4.6.5 Serial Device Connection

The MXGG has one male DB-9 connectors on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the MXGG.

Step 1: **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Chapter 3**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 4-21.

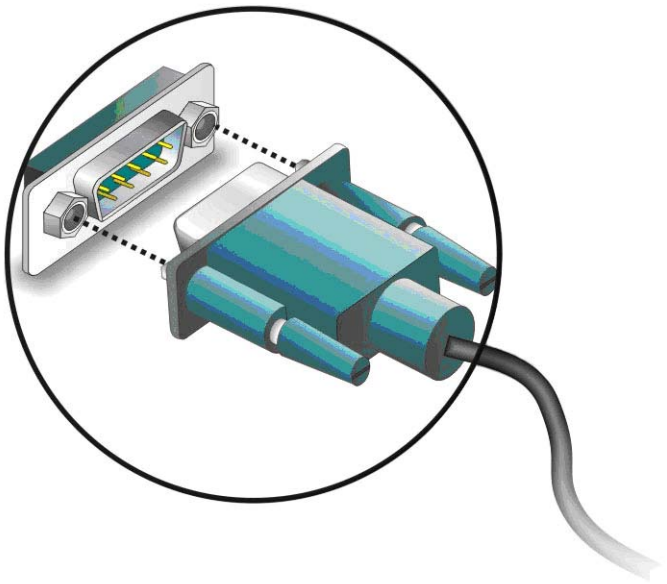

Figure 4-21: Serial Device Connector

Step 3: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

4.6.6 USB Device Connection

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the MXGG.

Step 1: **Locate the USB Series "A" receptacle connectors**. The location of the USB Series "A" receptacle connectors are shown in **Chapter 3**.

Step 2: **Insert a USB Series "A" plug**. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See **Figure 4-22**.

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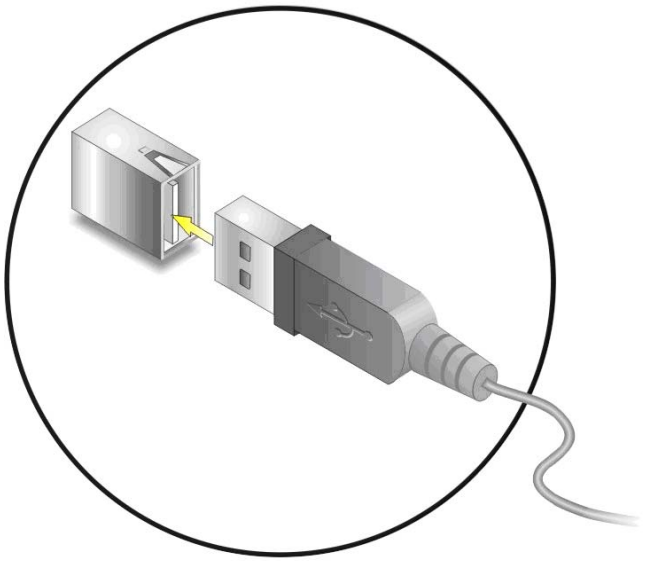

Figure 4-22: USB Connector

4.6.7 VGA Monitor Connection

The MXGG has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the MXGG, please follow the instructions below.

Step 1: **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Chapter 3**.

Step 2: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the MXGG. See **Figure 4-23**.

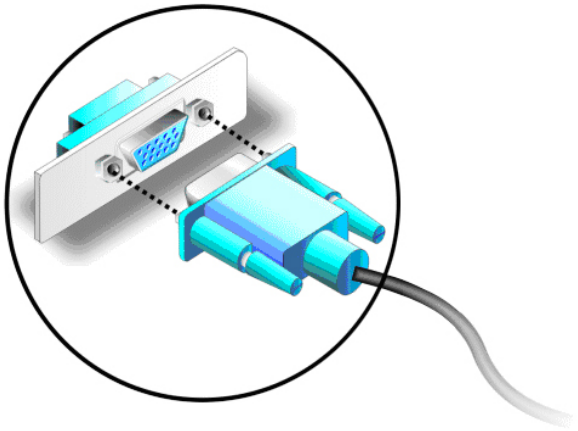

Figure 4-23: VGA Connector

Step 4: **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

4.7 Software Installation

All the drivers for the MXGG are on the DVD that came with the system. To install the drivers, please follow the steps below.

Step 1: Insert the DVD into a DVD drive connected to the system.

NOTE:

If the installation program doesn't start automatically:
Click "Start->My Computer->DVD Drive->autorun.exe"

Step 2: The driver main menu appears.

Step 3: Navigate to the MXGG Series board.

Step 4: A new screen with a list of available drivers appears.

Step 5: Follow the prompts to install all of the necessary drivers.

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Chapter

5

BIOS

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **F2** key as soon as the system is turned on or
2. Press the **F2** key when the "**Press F2 to enter SETUP**" message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, press **F1** for help and press **ESC** to quit. Navigation keys are shown below.

Key	Function
Up arrow	Move to the item above
Down arrow	Move to the item below
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
Page up	Move to the next page
Page down	Move to the previous page
Esc	Main Menu – Quit and do not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu

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F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F9	Load optimized defaults
F10	Save changes and Exit BIOS

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

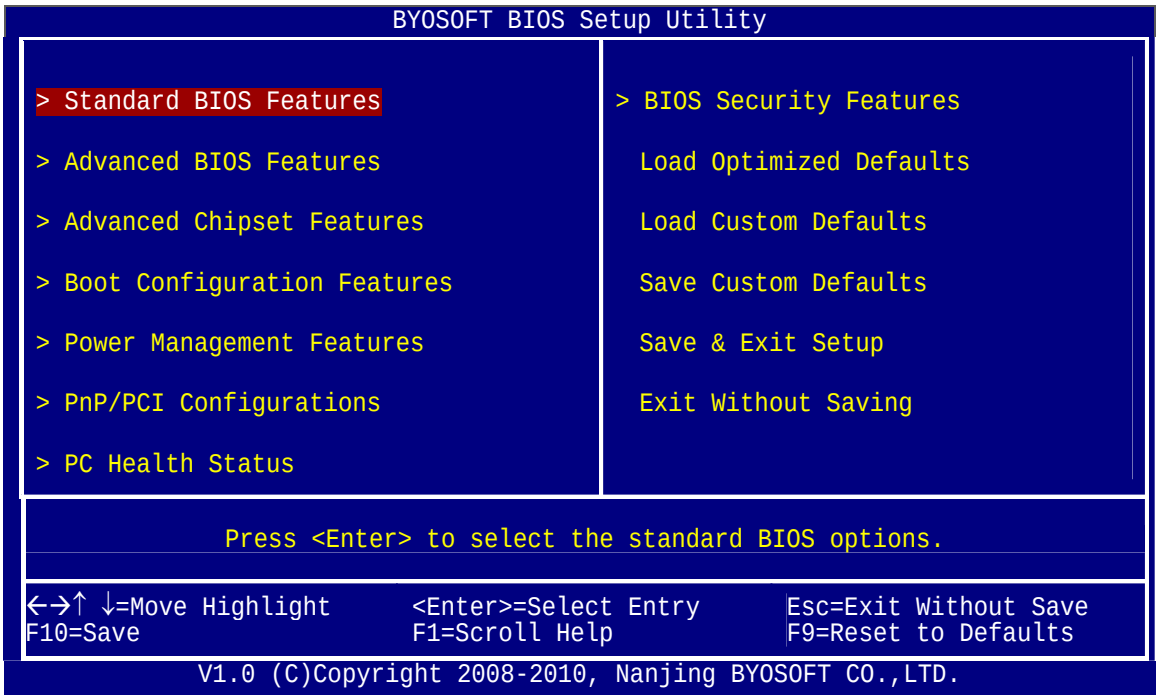
When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot After Configuration Changes

If the system cannot be booted after changes are made, restore the CMOS defaults. The CPU card should come with a restore CMOS settings jumper. Refer to **Section 4.4.2** for more information.

5.1.5 Main BIOS Menu

Once the BIOS opens, the main menu (**BIOS BIOS Menu** 1) appears.



BIOS BIOS Menu 1: Award BIOS CMOS Setup Utility

NOTE:

The following sections will completely describe the menus listed below and the configuration options available to users.

The following menu options are seen in **BIOS BIOS Menu** 1.

- **Standard BIOS Features**: Changes the basic system configuration.
- **Advanced BIOS Features**: Changes the advanced system settings.
- **Advanced Chipset Features**: Changes the chipset configuration features.
- **Boot Configuration Features**: Changes the system boot configurations.
- **Power Management Features**: Configures power saving options.
- **PnP/PCI Configurations**: Changes the advanced PCI/PnP settings.
- **PC Health Status**: Monitors essential system parameters.
- **BIOS Security Features**: Sets passwords and HDD security.

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The following user configurable options are also available in **BIOS BIOS Menu** 1:

➔ **Load Optimized Defaults**

Use the **Load Optimized Defaults** option to load optimal default values for each BIOS parameter in the setup menus. Press **F9** for this operation on any page.

➔ **Load Custom Defaults**

Use the **Load Custom Defaults** option to load custom default values for each BIOS parameter in the setup menus.

➔ **Save Custom Defaults**

Use the **Save Custom Defaults** option to save any configuration changes made to custom default.

➔ **Save & Exit Setup**

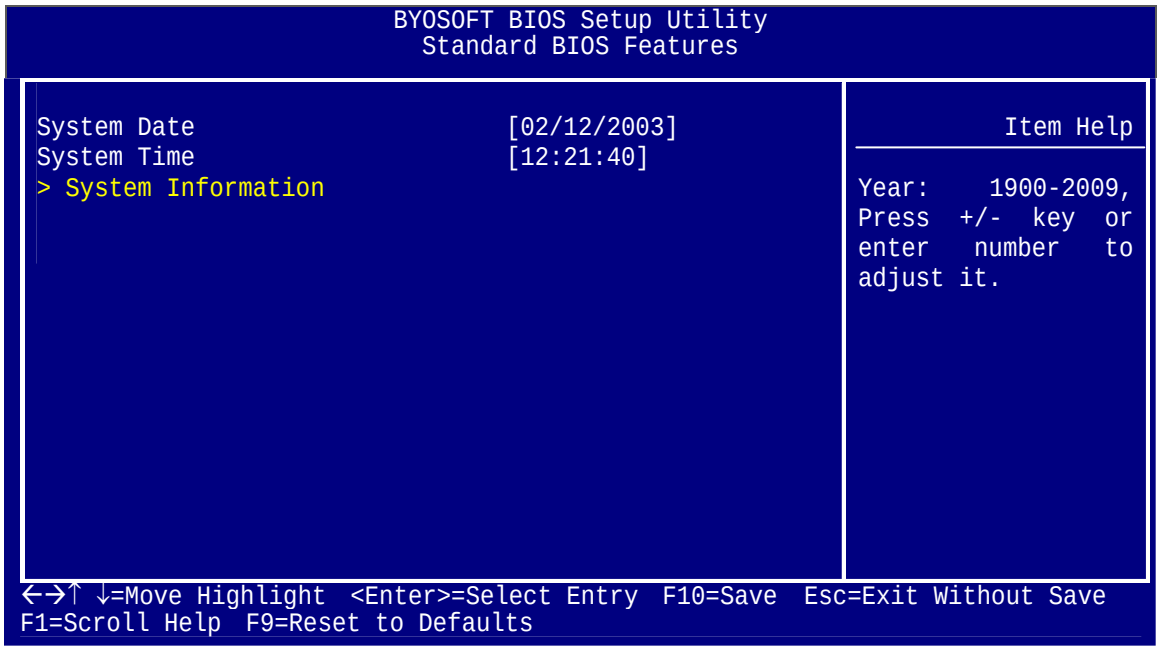
Use the **Save & Exit Setup** option to save any configuration changes made and exit the BIOS menus.

➔ **Exit Without Saving**

Use the **Exit Without Saving** option to exit the BIOS menus without saving any configuration changes.

5.2 Standard BIOS Features

Use the **Standard BIOS Features** BIOS menu (**BIOS Menu 2**) to set basic BIOS configuration options.


BYOSOFT BIOS Setup Utility
Standard BIOS Features
System Date [02/12/2003]
System Time [12:21:40]
> System Information
Item Help
Year: 1900-2009, Press +/- key or enter number to adjust it.
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 2: Standard BIOS Features

➔ **Date [Day mm:dd:yyyy]**

Use the **Date** option to set the system date

➔ **Time [hh/mm/ss]**

Use the **Time** option to set the system time.

5.2.1 System Information

Use the **System Information** BIOS menu (**BIOS Menu 3**) to view the system information.

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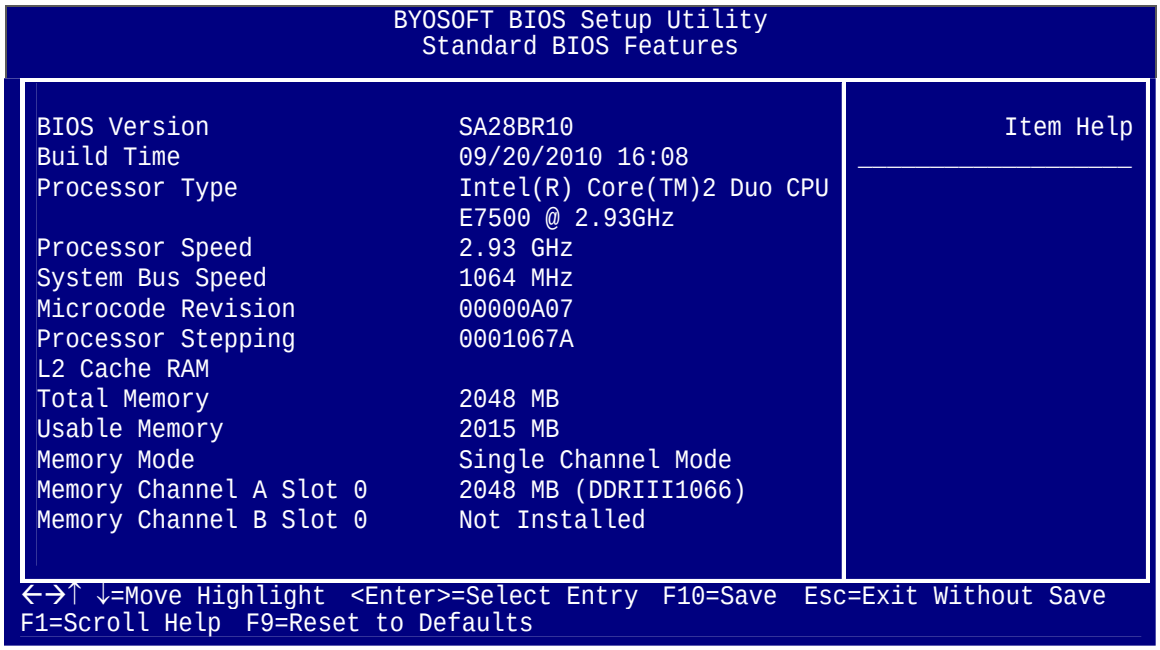
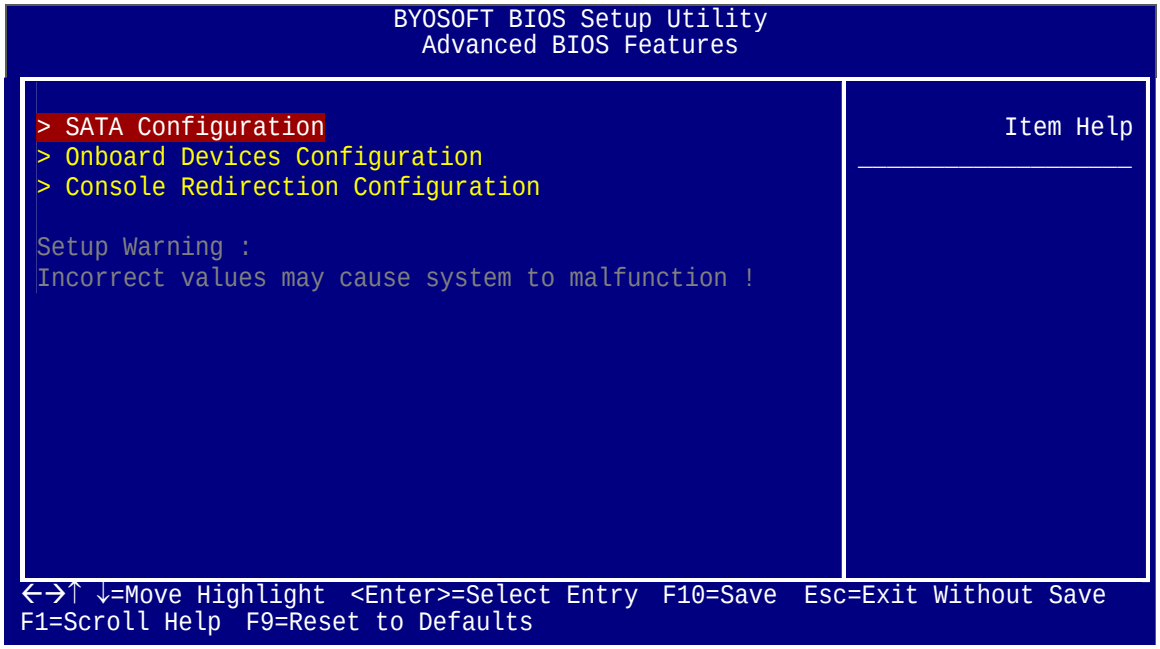

BYOSOFT BIOS Setup Utility
Standard BIOS Features
BIOS Version SA28BR10
Build Time 09/20/2010 16:08
Processor Type Intel(R) Core(TM)2 Duo CPU
E7500 @ 2.93GHz
Processor Speed 2.93 GHz
System Bus Speed 1064 MHz
Microcode Revision 00000A07
Processor Stepping 0001067A
L2 Cache RAM
Total Memory 2048 MB
Usable Memory 2015 MB
Memory Mode Single Channel Mode
Memory Channel A Slot 0 2048 MB (DDRIII1066)
Memory Channel B Slot 0 Not Installed
Item Help
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 3: System Information

5.3 Advanced BIOS Features

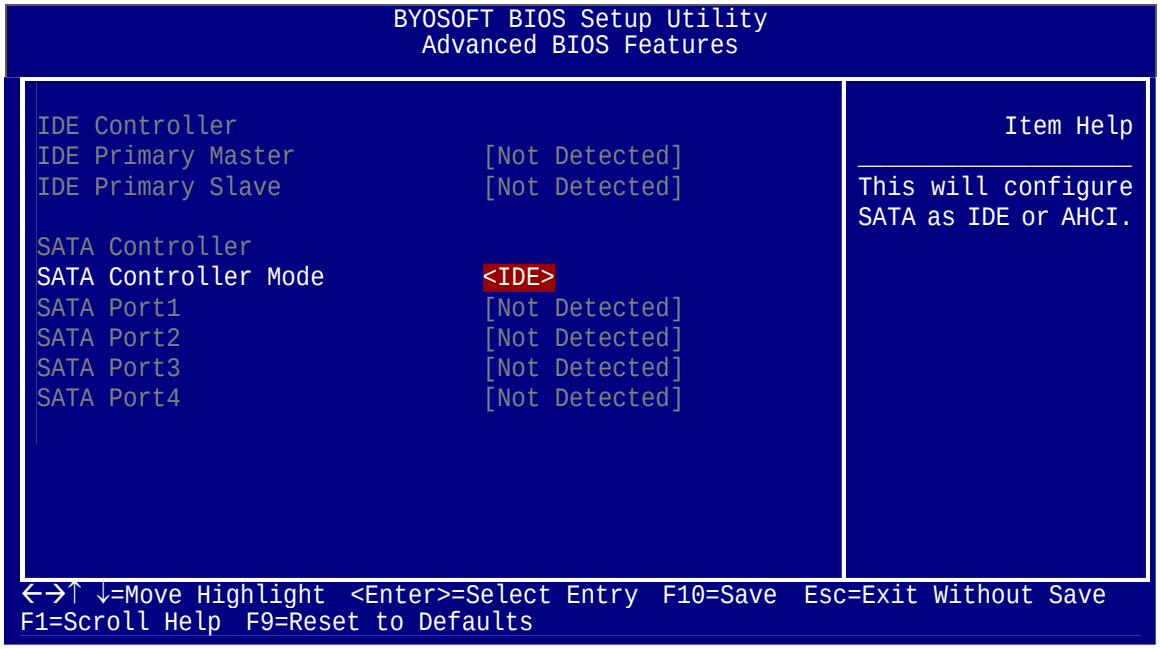
Use the **Advanced BIOS Features** menu (**BIOS Menu 4**) to configure the peripheral device configuration options.


BYOSOFT BIOS Setup Utility
Advanced BIOS Features
> SATA Configuration
> Onboard Devices Configuration
> Console Redirection Configuration
Setup Warning :
Incorrect values may cause system to malfunction !
Item Help
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 4: Advanced BIOS Features

5.3.1 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 5**) to configure the IDE and SATA device configuration options.


BYOSOFT BIOS Setup Utility
Advanced BIOS Features
IDE Controller
IDE Primary Master [Not Detected]
IDE Primary Slave [Not Detected]
SATA Controller
SATA Controller Mode <IDE>
SATA Port1 [Not Detected]
SATA Port2 [Not Detected]
SATA Port3 [Not Detected]
SATA Port4 [Not Detected]
Item Help
This will configure SATA as IDE or AHCI.
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 5: SATA Configuration

➔ **SATA Controller Mode [IDE]**

Use the **SATA Controller Mode** option to configure SATA devices as normal IDE devices.

➔ **IDE** **DEFAULT** Configures SATA devices as normal IDE device.

5.3.2 Onboard Devices Configuration

Use the **Onboard Devices Configuration** menu (**BIOS Menu 6**) to configure the onboard device configuration options.

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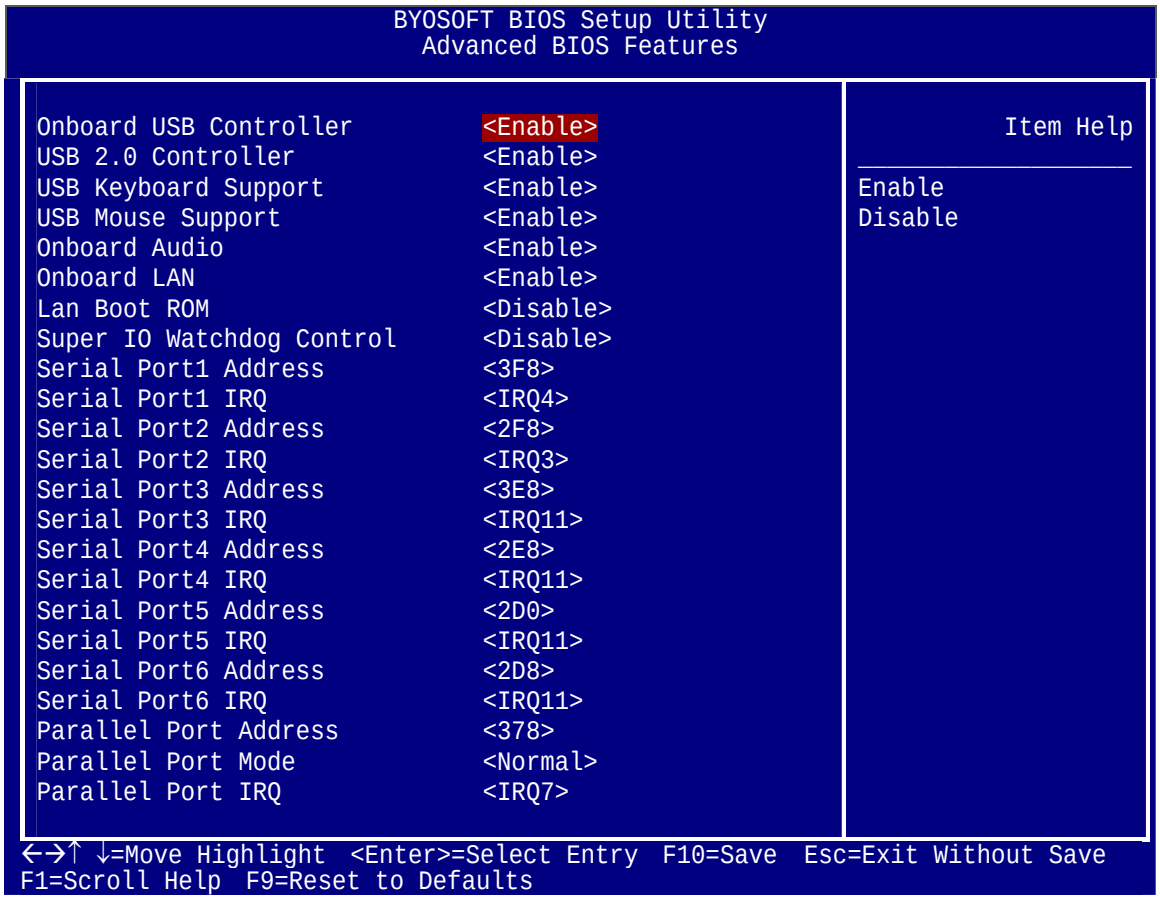

BIOS Menu 6: Onboard Devices Configuration

➔ **Onboard USB Controller [Enable]**

Use the **Onboard USB Controller** BIOS option to enable or disable the onboard USB controller

➔	**Enable**	**DEFAULT**	Onboard USB controller enabled
➔	**Disable**		Onboard USB controller disabled

➔ **USB 2.0 Controller [Enable]**

Use the **USB 2.0 Controller** BIOS option to enable or disable the USB 2.0 controller

➔	**Enable**	**DEFAULT**	USB 2.0 controller enabled
➔	**Disable**		USB 2.0 controller disabled

➔ **USB Keyboard Support [Enable]**

Use the **USB Keyboard Support** option to enable or disable the use of a USB keyboard.

➔ **Enable** **DEFAULT** USB keyboard can be used

➔ **Disable** USB keyboard cannot be used

➔ **USB Mouse Support [Enable]**

Use the **USB Mouse Support** option to enable or disable the use of a USB keyboard.

➔ **Enable** **DEFAULT** USB mouse can be used

➔ **Disable** USB mouse cannot be used

➔ **Onboard Audio [Enable]**

Use the **Onboard Audio** option to enable or disable the onboard codec.

➔ **Enable** **DEFAULT** The onboard codec is detected and enabled.

➔ **Disable** The onboard codec is disabled.

➔ **Onboard LAN [Enable]**

Use the **Onboard LAN** option to enable or disable the onboard LAN device.

➔ **Enable** **DEFAULT** The onboard LAN device is detected and enabled.

➔ **Disable** The onboard LAN device is disabled.

➔ **Lan Boot ROM [Disable]**

Use the **Lan Boot ROM** option to enable the system to be booted from a remote system. The boot ROM needs to support RPL and PXE protocol. The default setting is for PXE protocol.

➔ **Enable** Can be booted from a remote system through the LAN

➔ **Disable** **DEFAULT** Cannot be booted from a remote system through the

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LAN

➔ **Super IO Watchdog Control [Disable]**

Use the **Super IO Watchdog Control** option to enable or disable the watchdog function. If the watchdog is enabled, the default setting is 50 seconds. The minimum value is 50 seconds, while the maximum value is 255 seconds.

➔ **Enable** The watchdog function is enabled. **Watchdog Timer Duration** option appears with the following option to select:

- 50 seconds
- 100 seconds
- 150 seconds
- 200 seconds
- 255 seconds

➔ **Disable** **DEFAULT** The watchdog function is disabled.

➔ **Serial Port1 Address [3F8]**

Use the **Serial Port1 Address** option to select the base addresses for serial port 1

➔ **Disabled** No base address is assigned to serial port 1

➔ **3F8** **DEFAULT** Serial port 1 I/O port address is 3F8

➔ **2F8** Serial port 1 I/O port address is 2F8

➔ **3E8** Serial port 1 I/O port address is 3E8

➔ **2E8** Serial port 1 I/O port address is 2E8

➔ **2D0** Serial port 1 I/O port address is 2D0

➔ **2D8** Serial port 1 I/O port address is 2D8

➔ **Serial Port1 IRQ [IRQ4]**

Use the **Serial Port1 IRQ** option to select the interrupt address for serial port 1.

- ➔ **IRQ3** Serial port 1 IRQ address is 3
- ➔ **IRQ4** **DEFAULT** Serial port 1 IRQ address is 4
- ➔ **IRQ10** Serial port 1 IRQ address is 10
- ➔ **IRQ11** Serial port 1 IRQ address is 11

➔ **Serial Port2 Address [2F8]**

Use the **Serial Port2 Address** option to select the base addresses for serial port 2

- ➔ **Disabled** No base address is assigned to serial port 2
- ➔ **3F8** Serial port 2 I/O port address is 3F8
- ➔ **2F8** **DEFAULT** Serial port 2 I/O port address is 2F8
- ➔ **3E8** Serial port 2 I/O port address is 3E8
- ➔ **2E8** Serial port 2 I/O port address is 2E8
- ➔ **2D0** Serial port 2 I/O port address is 2D0
- ➔ **2D8** Serial port 2 I/O port address is 2D8

➔ **Serial Port2 IRQ [IRQ3]**

Use the **Serial Port2 IRQ** option to select the interrupt address for serial port 2.

- ➔ **IRQ3** **DEFAULT** Serial port 2 IRQ address is 3
- ➔ **IRQ4** Serial port 2 IRQ address is 4
- ➔ **IRQ10** Serial port 2 IRQ address is 10
- ➔ **IRQ11** Serial port 2 IRQ address is 11

➔ **Serial Port3 Address [3E8]**

Use the **Serial Port3 Address** option to select the base addresses for serial port 3

- ➔ **Disabled** No base address is assigned to serial port 3
- ➔ **3F8** Serial port 3 I/O port address is 3F8

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- ➔ **2F8** Serial port 3 I/O port address is 2F8
- ➔ **3E8** **DEFAULT** Serial port 3 I/O port address is 3E8
- ➔ **2E8** Serial port 3 I/O port address is 2E8
- ➔ **2D0** Serial port 3 I/O port address is 2D0
- ➔ **2D8** Serial port 3 I/O port address is 2D8

➔ **Serial Port3 IRQ [IRQ11]**

Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

- ➔ **IRQ3** Serial port 3 IRQ address is 3
- ➔ **IRQ4** Serial port 3 IRQ address is 4
- ➔ **IRQ10** Serial port 3 IRQ address is 10
- ➔ **IRQ11** **DEFAULT** Serial port 3 IRQ address is 11

➔ **Serial Port4 Address [2E8]**

Use the **Serial Port4 Address** option to select the base addresses for serial port 4

- ➔ **Disabled** No base address is assigned to serial port 4
- ➔ **3F8** Serial port 4 I/O port address is 3F8
- ➔ **2F8** Serial port 4 I/O port address is 2F8
- ➔ **3E8** Serial port 4 I/O port address is 3E8
- ➔ **2E8** **DEFAULT** Serial port 4 I/O port address is 2E8
- ➔ **2D0** Serial port 4 I/O port address is 2D0
- ➔ **2D8** Serial port 4 I/O port address is 2D8

➔ **Serial Port4 IRQ [IRQ11]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- ➔ **IRQ3** Serial port 4 IRQ address is 3

- ➔ **IRQ4** Serial port 4 IRQ address is 4
- ➔ **IRQ10** Serial port 4 IRQ address is 10
- ➔ **IRQ11** **DEFAULT** Serial port 4 IRQ address is 11

➔ **Serial Port5 Address [2D0]**

Use the **Serial Port5 Address** option to select the base addresses for serial port 5

- ➔ **Disabled** No base address is assigned to serial port 5
- ➔ **3F8** Serial port 5 I/O port address is 3F8
- ➔ **2F8** Serial port 5 I/O port address is 2F8
- ➔ **3E8** Serial port 5 I/O port address is 3E8
- ➔ **2E8** Serial port 5 I/O port address is 2E8
- ➔ **2D0** **DEFAULT** Serial port 5 I/O port address is 2D0
- ➔ **2D8** Serial port 5 I/O port address is 2D8

➔ **Serial Port5 IRQ [IRQ11]**

Use the **Serial Port5 IRQ** option to select the interrupt address for serial port 5.

- ➔ **IRQ3** Serial port 5 IRQ address is 3
- ➔ **IRQ4** Serial port 5 IRQ address is 4
- ➔ **IRQ10** Serial port 5 IRQ address is 10
- ➔ **IRQ11** **DEFAULT** Serial port 5 IRQ address is 11

➔ **Serial Port6 Address [2D8]**

Use the **Serial Port6 Address** option to select the base addresses for serial port 6

- ➔ **Disabled** No base address is assigned to serial port 6
- ➔ **3F8** Serial port 6 I/O port address is 3F8
- ➔ **2F8** Serial port 6 I/O port address is 2F8

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- ➔ **3E8** Serial port 6 I/O port address is 3E8
- ➔ **2E8** Serial port 6 I/O port address is 2E8
- ➔ **2D0** Serial port 6 I/O port address is 2D0
- ➔ **2D8** **DEFAULT** Serial port 6 I/O port address is 2D8

➔ **Serial Port6 IRQ [IRQ11]**

Use the **Serial Port6 IRQ** option to select the interrupt address for serial port 6.

- ➔ **IRQ3** Serial port 6 IRQ address is 3
- ➔ **IRQ4** Serial port 6 IRQ address is 4
- ➔ **IRQ10** Serial port 6 IRQ address is 10
- ➔ **IRQ11** **DEFAULT** Serial port 6 IRQ address is 11

➔ **Parallel Port Address [378]**

Use the **Parallel Port Address** option to select the parallel port base address.

- ➔ **Disabled** No base address is assigned to the Parallel Port
- ➔ **378** **DEFAULT** Parallel Port I/O port address is 378
- ➔ **278** Parallel Port I/O port address is 278
- ➔ **3BC** Parallel Port I/O port address is 3BC

➔ **Parallel Port Mode [Normal]**

Use the **Parallel Port Mode** option to select the mode the parallel port operates in.

- ➔ **Normal** **DEFAULT** The normal parallel port mode is the standard mode for parallel port operation.
- ➔ **Bi-directional** Parallel port outputs are 8-bits long. Inputs are accomplished by reading 4 of the 8 bits on the status register.

➔ **EPP** The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.

➔ **ECP+EPP** The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode

The parallel port is also be compatible with EPP devices described above

➔ **Parallel Port IRQ [IRQ7]**

Use the **Parallel Port IRQ** selection to set the parallel port interrupt address.

➔ **IRQ5** IRQ5 is assigned as the parallel port interrupt address

➔ **IRQ7** **DEFAULT** IRQ7 is assigned as the parallel port interrupt address

5.3.3 Console Redirection Configuration

Use the **Console Redirection Configuration** menu (**BIOS Menu 7**) to configure the console redirection configuration options for remote access.

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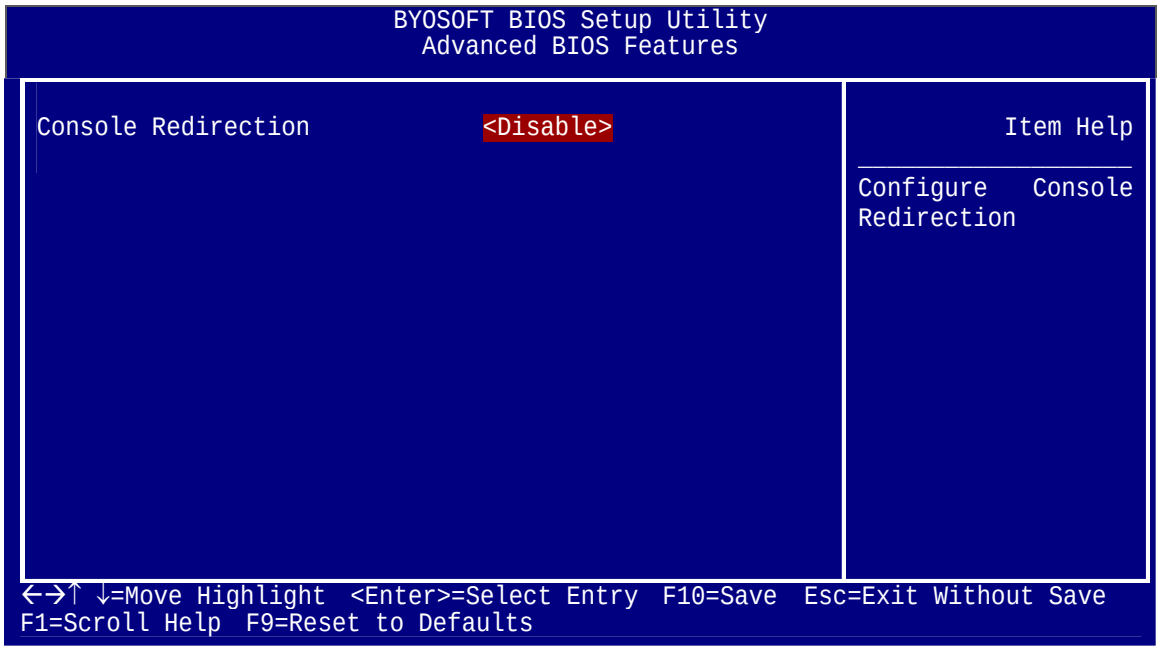
BYOSOFT BIOS Setup Utility
Advanced BIOS Features
Console Redirection
<Disable>
Item Help
Configure Console Redirection
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 7: Console Redirection Configuration

➔ **Console Redirection [Disable]**

Use the **Console Redirection** option to enable or disable access to the remote functionalities of the system.

➔ **Disabled** **DEFAULT** Console redirection is disabled.

➔ **Enabled** Console redirection configuration options shown below appear:

Serial Port Select

Serial Port Baudrate

These configuration options are discussed below.

➔ **Serial Port Select [COM1]**

Use the **Serial Port Select** option allows to select the serial port used for console redirection.

➔ **COM1** **DEFAULT** System is remotely accessed through COM1

➔ **COM2** System is remotely accessed through COM2

➔ **COM3** System is remotely accessed through COM3

➔ **COM4** System is remotely accessed through COM4

➔ **COM5** System is remotely accessed through COM5

➔ **COM6** System is remotely accessed through COM6

➔ **Serial Port Baudrate [115200]**

Use the **Serial Port Baudrate** option to select baud rate through which the console redirection is made. The following configuration options are available

- 9600
- 19200
- 38400
- 57600
- 115200 **DEFAULT**

NOTE:

Identical baud rate setting musts be set on the host (a management computer running a terminal software) and the slave

5.4 Advanced Chipset Features

Use the **Advanced Chipset Features** menu (**BIOS Menu 8**) to change chipset configuration options.

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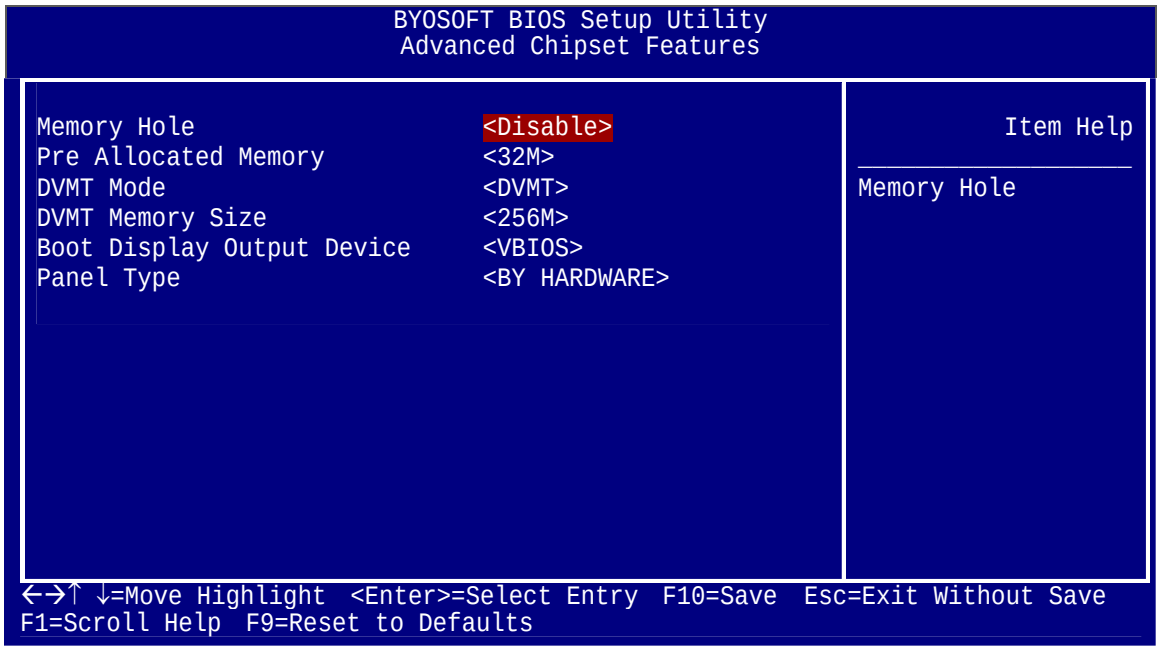

BIOS Menu 8: Advanced Chipset Features

➔ **Memory Hole [Disable]**

Use the **Memory Hole** option to reserve memory space for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

➔	**Disable**	**DEFAULT**	Memory is not reserved for ISA expansion cards
➔	**Enable**		Memory is reserved for ISA expansion cards

➔ **Pre Allocated Memory [32M]**

Use the **Pre Allocated Memory** option to determine how much memory is allocated to the graphics device. The **Pre Allocated Memory** options are:

- 32M **DEFAULT**
- 64M
- 128M
- 256M

➔ **DVMT Mode [DVMT]**

Use the **DVMT Mode** option to select the Intel Dynamic Video Memory Technology (DVMT) operating mode.

➔ **DVMT** **DEFAULT** Graphics memory is dynamically allocated according to the system and graphics needs.

➔ **DVMT Memory Size [256M]**

Use the **DVMT Memory Size** option to specify the maximum amount of memory that can be allocated as DVMT 4.0 graphics memory. Configuration options are listed below.

- 128M
- 256M **DEFAULT**
- DVMT_MAX

➔ **Boot Display Output Device**

Use the **Boot Display Output Device** option to select the display device used by the system when it boots. Configuration options are listed below.

- VBIOS
- CRT **DEFAULT**
- LFP

➔ **Panel Type [BY HARDWARE]**

Use the **Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

- BY HARDWARE
- 800 x 600 18b
- 1024 x 768 18b
- 1336 x 768 24b
- 1280 x 1024 24b

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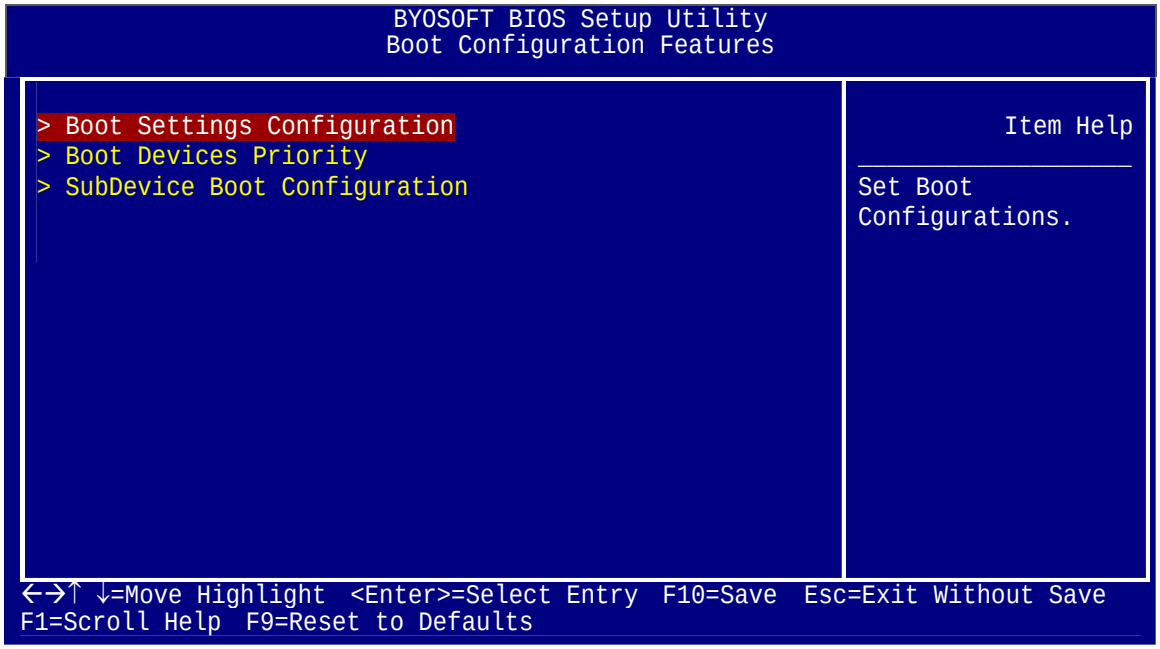
5.5 Boot Configuration Features

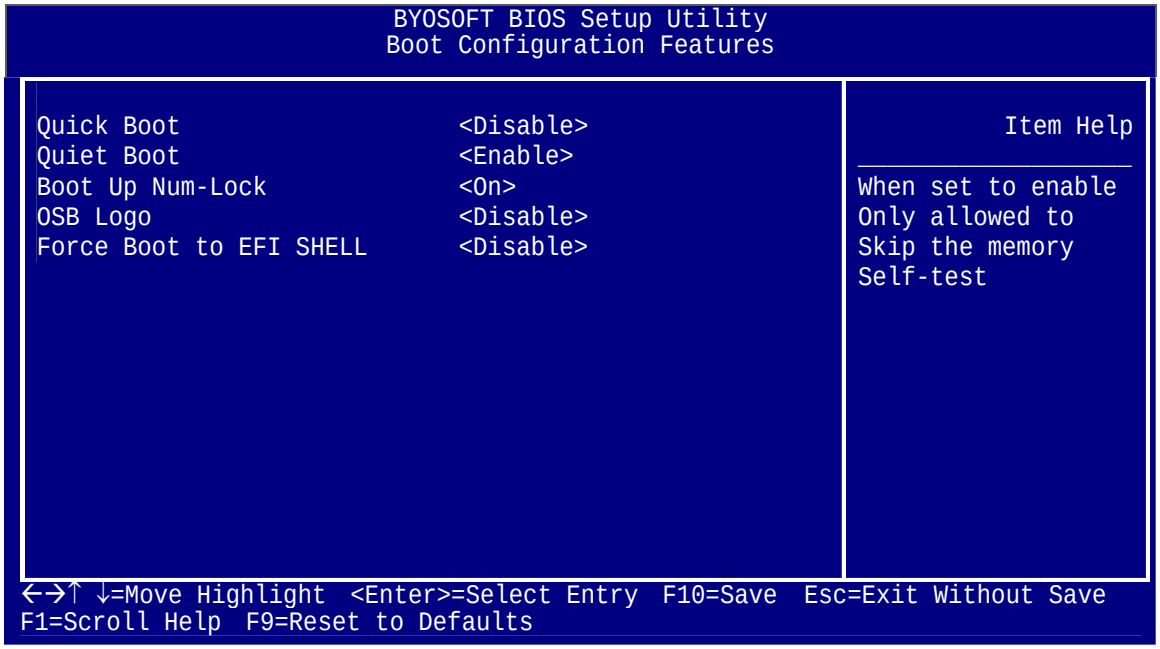
Use the **Boot Configuration Features** menu (**BIOS Menu 9**) to configure system boot options.


BYOSOFT BIOS Setup Utility
Boot Configuration Features
> Boot Settings Configuration
> Boot Devices Priority
> SubDevice Boot Configuration
Item Help
Set Boot Configurations.
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 9: Boot Configuration Features

5.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (**BIOS Menu 10**) to configure advanced system boot options.



BIOS Menu 10: Boot Settings Configuration

➔ **Quick Boot [Disable]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔	**Enable**		Some POST procedures are skipped to decrease the system boot time
➔	**Disable**	**DEFAULT**	No POST procedures are skipped

➔ **Quiet Boot [Enable]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔	**Enable**	**DEFAULT**	OEM Logo displayed instead of POST messages
➔	**Disable**		Normal POST messages displayed

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➔ **Bootup Num-Lock [On]**

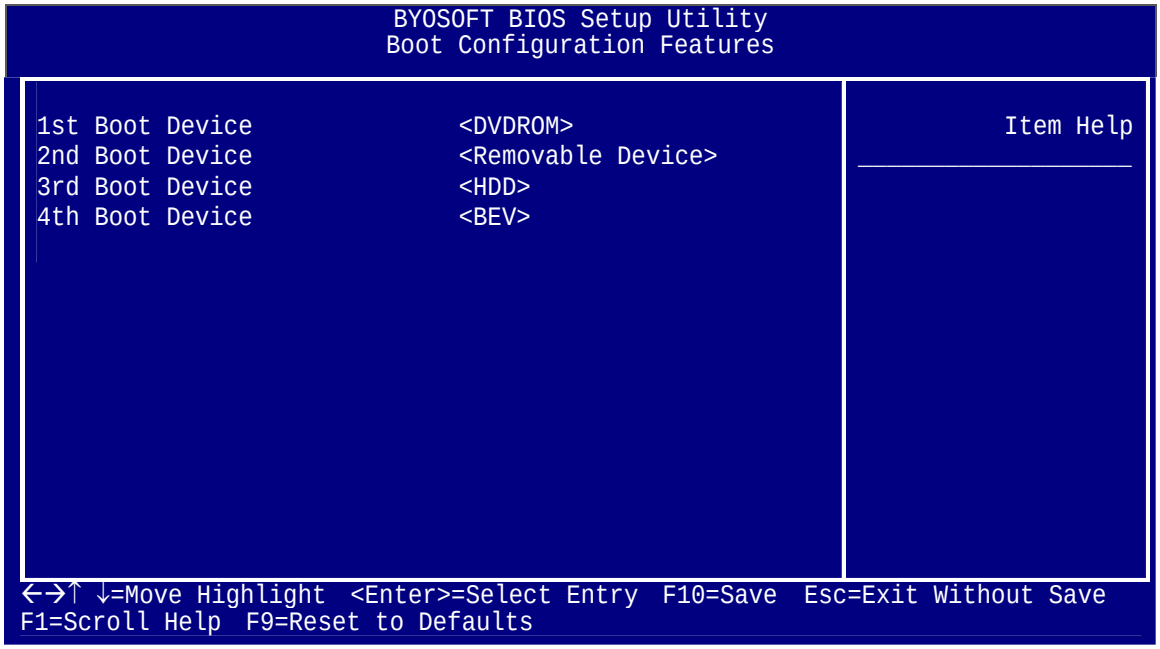
Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

5.5.2 Boot Device Priority

Use the **Boot Device Priority** menu (**BIOS Menu 11**) to specify the boot sequence from the available devices. The drive sequence also depends on the boot sequence in the individual device section.



BIOS Menu 11: Boot Device Priority Settings

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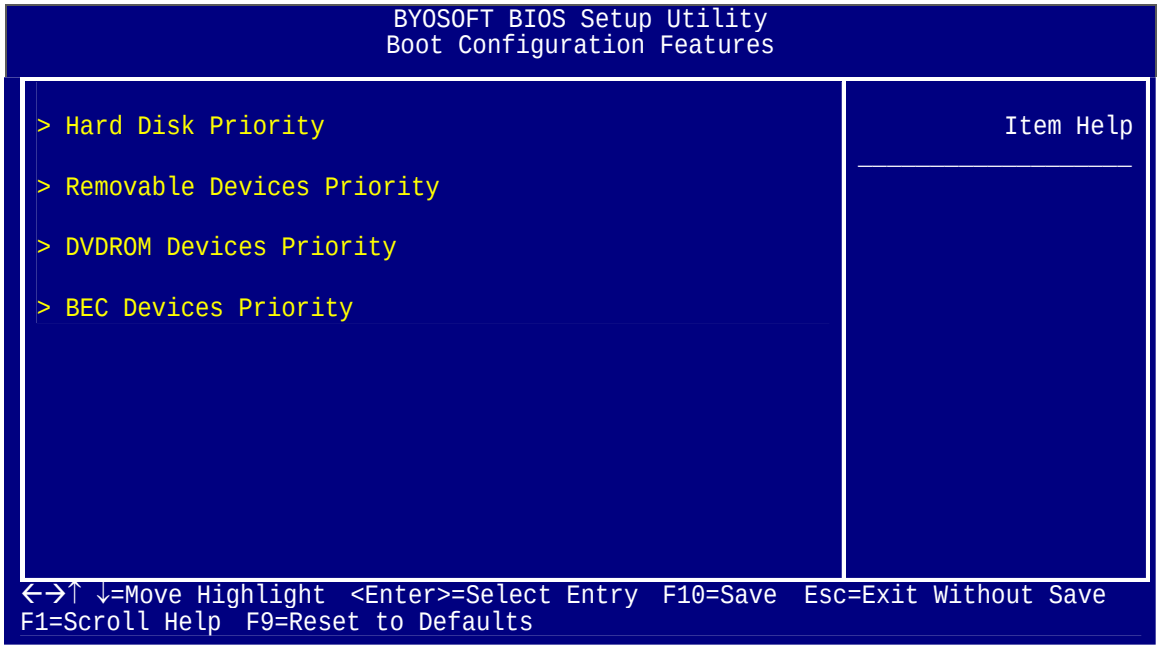
5.5.3 SubDevice Boot Configuration

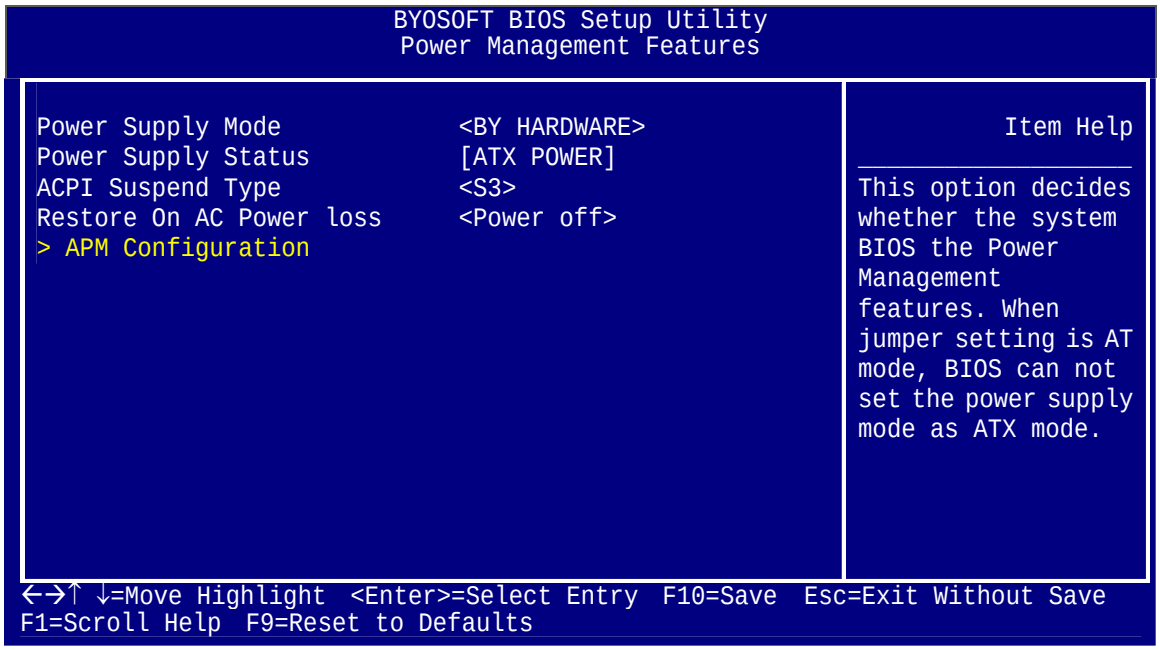
Use the **SubDevice Boot Configuration** menu to specify the boot sequence of the available HDDs, removable devices, DVD-ROM and BEC devices.


BYOSOFT BIOS Setup Utility
Boot Configuration Features
> Hard Disk Priority
> Removable Devices Priority
> DVDROM Devices Priority
> BEC Devices Priority
Item Help
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 12: SubDevice Boot Configuration

5.6 Power Management Features

Use the **Power Management Features** menu (**BIOS Menu 13**) to set the BIOS power management and saving features.


BYOSOFT BIOS Setup Utility
Power Management Features
Power Supply Mode <BY HARDWARE>
Power Supply Status [ATX POWER]
ACPI Suspend Type <S3>
Restore On AC Power loss <Power off>
> APM Configuration
Item Help
This option decides whether the system BIOS the Power Management features. When jumper setting is AT mode, BIOS can not set the power supply mode as ATX mode.
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 13: Power Management Features

➔ **Power Supply Mode [BY HARDWARE]**

Use the **Power Supply Mode** BIOS option to select the power mode for the system.

➔ **AT Power**		Use AT power mode
➔ **ATX Power**		Use ATX power mode
➔ **BY HARDWARE**	**DEFAULT**	The power mode is selected by the on-board jumper.

➔ **ACPI Suspend Type [S3]**

Use the **ACPI Suspend Type** BIOS option to specify the sleep state the system enters when not being used.

➔ **S1**		System appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.
➔ **S3**	**DEFAULT**	System appears off. The CPU has no power; RAM is in slow refresh; the power supply is in a reduced power mode.

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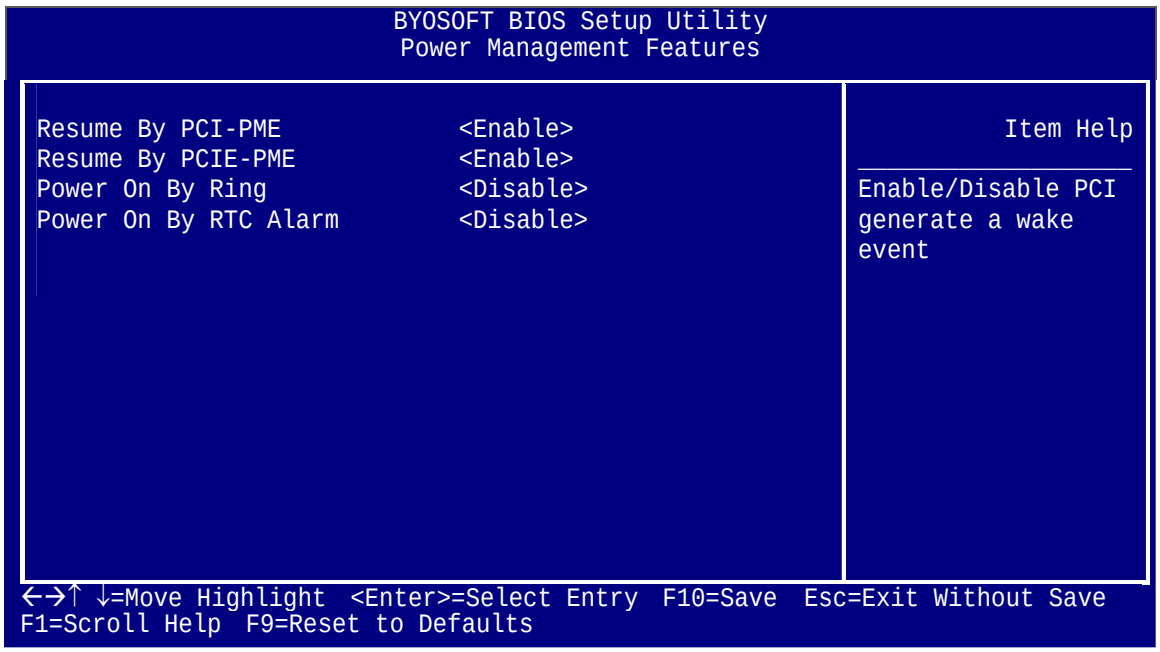
➔ **Restore on AC Power Loss [Power Off]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power On**		The system turns on
➔ **Power Off**	**DEFAULT**	The system remains turned off
➔ **Last State**		The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

5.6.1 APM Configuration

The **APM Configuration** menu (**BIOS Menu 14**) allows the advanced power management options to be configured..



BIOS Menu 14: APM Configuration

➔ **Resume By PCI-PME [Enable]**

Use the **Resume By PCI-PME** BIOS option to enable activity on the PCI PME (power management event) controller to rouse the system from a suspend or standby state.

➔ **Enable**	**DEFAULT**	Wake event generated by PCI PME controller activity

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➔ **Disable** Wake event not generated by PCI PME controller activity

➔ **Resume By PCIE-PME [Enable]**

Use the **Resume By PCI-PME** BIOS option to enable activity on the PCI PME (power management event) controller to rouse the system from a suspend or standby state.

➔ **Enable** **DEFAULT** Wake event generated by PCIe PME controller activity

➔ **Disable** Wake event not generated by PCIe PME controller activity

➔ **Power On By Ring [Disable]**

Use the **Power On By Ring** option to enable the system to be roused from a suspended or standby state when there is activity on the RI (ring in) modem line. That is, the system is roused by an incoming call on a modem.

➔ **Enable** Wake event generated by an incoming call

➔ **Disable** **DEFAULT** Wake event not generated by an incoming call

➔ **Power On By RTC Alarm [Disable]**

Use the **Power On By RTC Alarm** option to specify the time the system should be roused from a suspended state.

➔ **Enable** If selected, the following appears with values that can be selected:

RTC Day

RTC Hour

RTC Minute

RTC Second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

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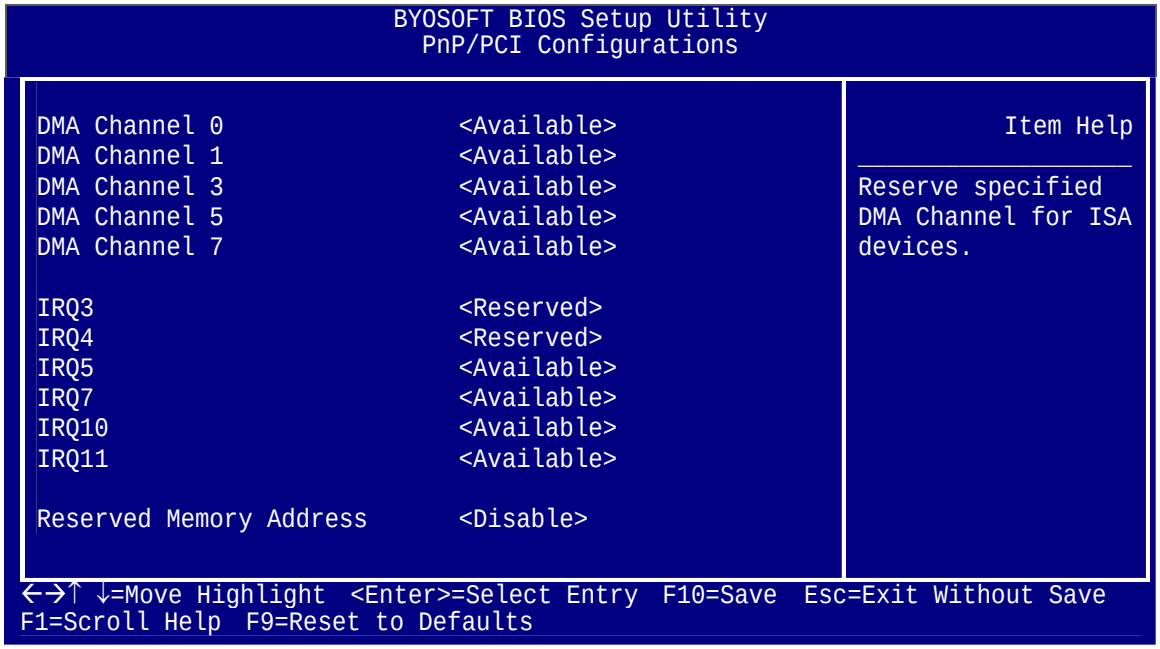
➔ **Disable** **DEFAULT** The real time clock (RTC) cannot generate a wake event

5.7 PnP/PCI Configurations

Use the **PnP/PCI Configurations** menu (**BIOS Menu 15**) to set the plug and play, and PCI options.



BIOS Menu 15: PnP/PCI Configurations

➔ **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

➔ **Available** **DEFAULT** The specified DMA is available to be used by PCI/PnP devices

➔ **Reserved** The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

➔ **IRQ#**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available**	The specified IRQ is available to be used by PCI/PnP devices
➔ **Reserved**	The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ10
- IRQ 11

➔ **Reserved Memory Address [Disable]**

The **Reserved Memory Base** option specifies the base address for the peripheral device. The **Reserved Memory Base** options are:

- Disable **DEFAULT**
- D0000: 16K
- D0000: 32K
- D0000: 64K
- D4000: 16K
- D4000: 32K

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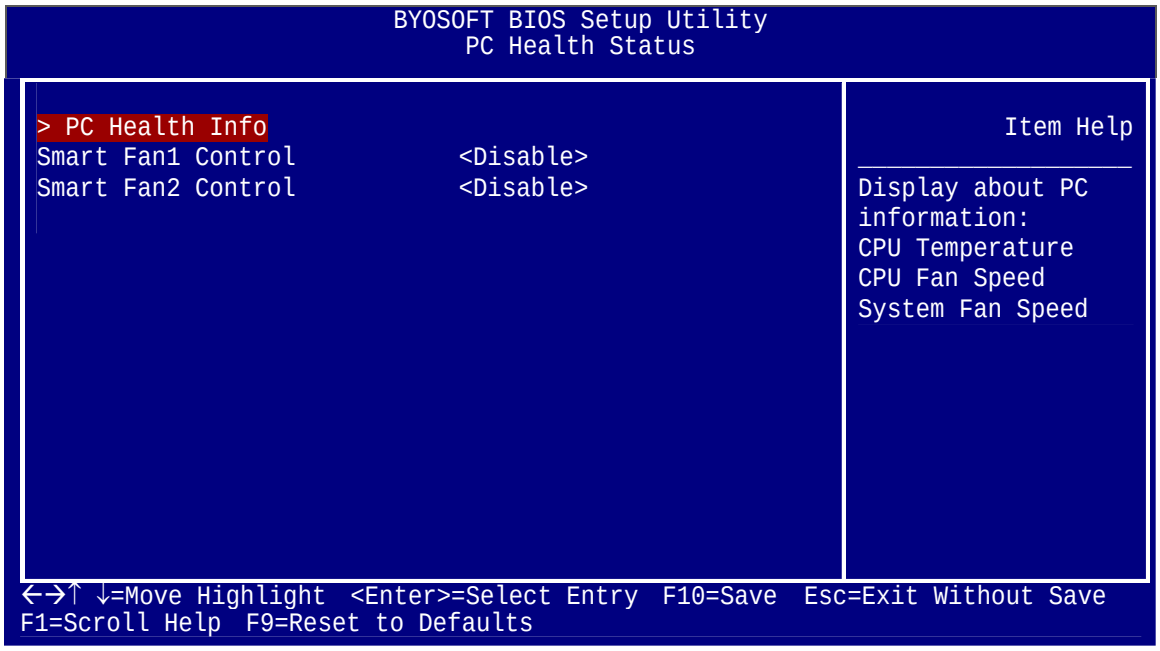
- D4000: 64K
- D8000: 16K
- D8000: 32K
- DC000: 16K

5.8 PC Health Status

Use the **PC Health Status** menu (**BIOS Menu 16**) to enable or disable the smart fan.



BIOS Menu 16: PC Health Status

➔ **Smart Fan# Control [Disable]**

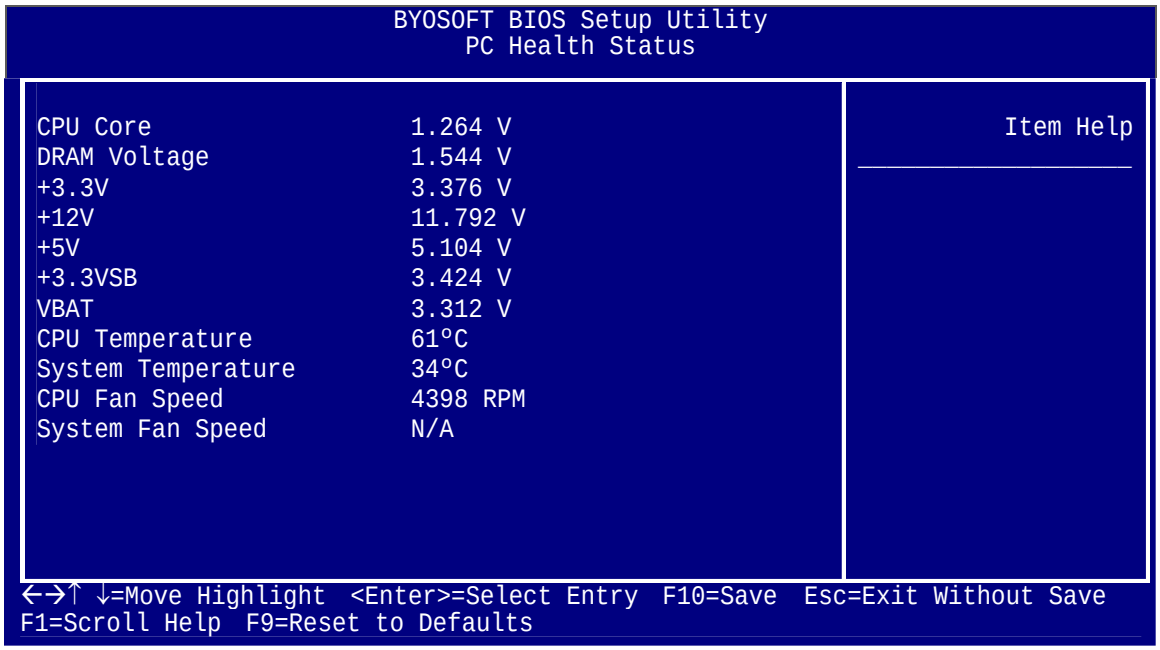
Use the **Smart Fan# Control** to enable or disable the smart fan.

➔ **Enable** Enables the smart fan#

➔ **Disable** **DEFAULT** Disables the smart fan#

5.8.1 PC Health Info

The **PC Health Info** menu (**BIOS Menu 17**) has no user configurable options, but shows system operating parameters that are essential to the stable operation of the system.



BIOS Menu 17: PC Health Status

The following system parameters are monitored by the **PC Health Status** menu.

➔ **Voltages**

The following voltages are monitored:

- CPU Core
- DRAM Voltage
- +3.3V
- +12V
- +5V
- +3.3VSB
- VBAT

➔ **System Temperature**

The following temperatures are monitored:

- CPU Temperature
- System Temperature

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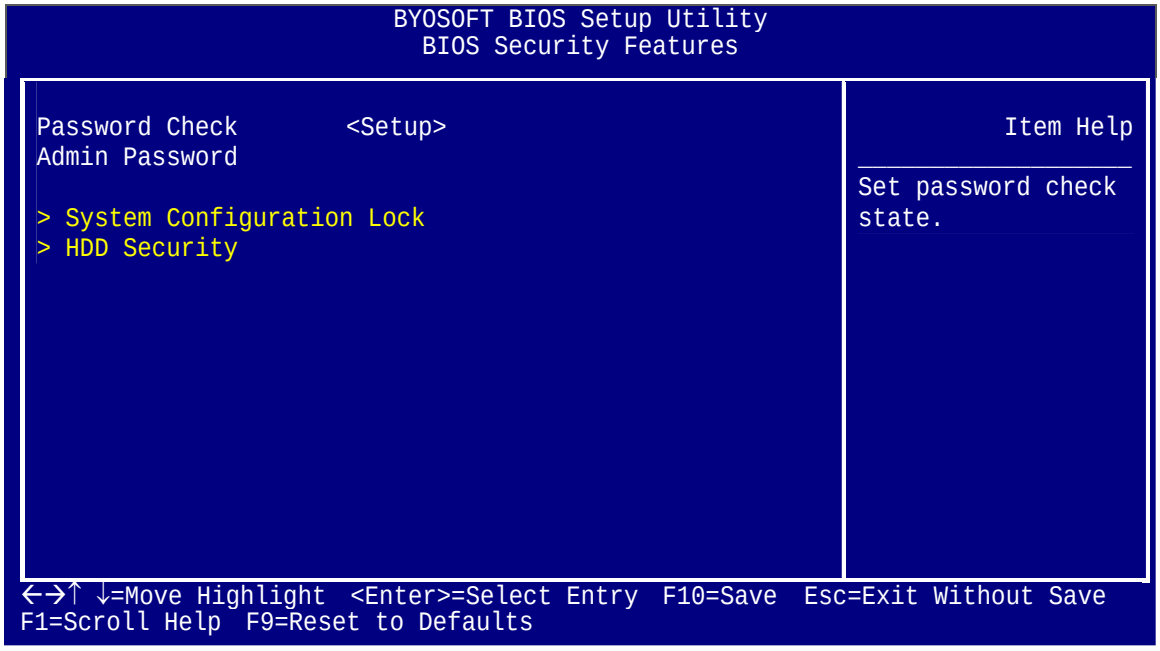
➔ **Fan Speeds**

The following fan speeds are monitored:

- CPU Fan Speed
- System Fan Speed

5.9 BIOS Security Features

Use the **BIOS Security Features** menu (**BIOS Menu 18**) to set system and user passwords.



BIOS Menu 18: BIOS Security Features

➔ **Password Check [Setup]**

Use the **Password Check** to limit access to both the system and Setup, or just Setup.

➔ **Setup** **DEFAULT** The system does not boot and access to Setup is denied if the correct password is not entered at the prompt.

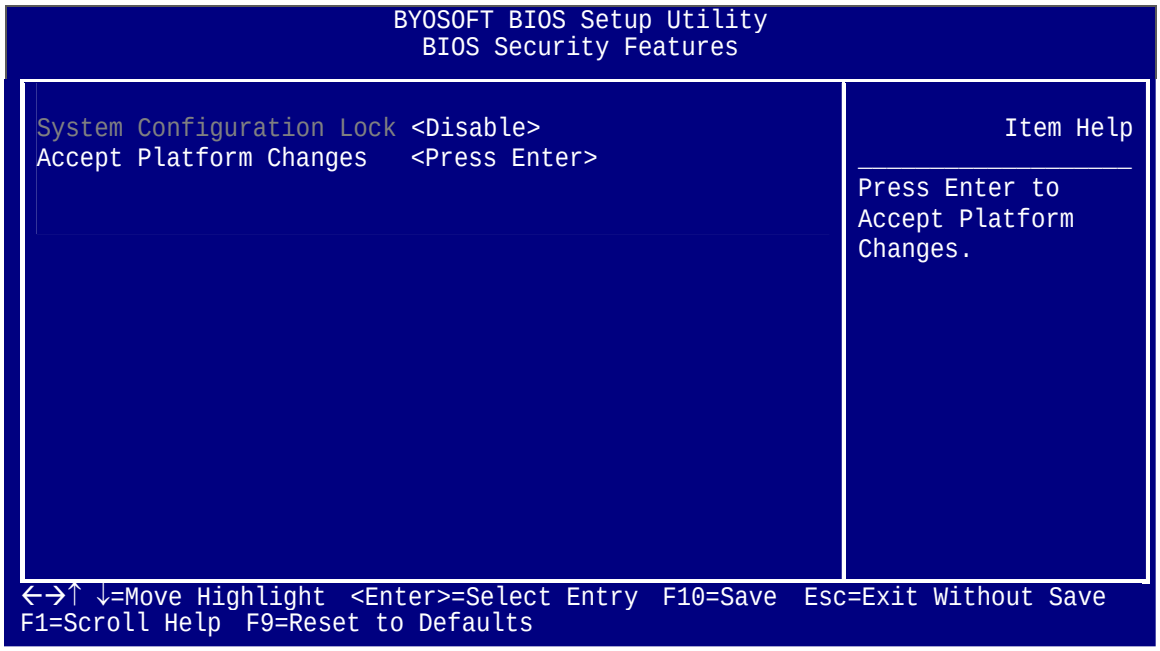
➔ **System** The system boots, but access to Setup is denied if the correct password is not entered at the prompt.

➔ **Admin Password**

Use the **Admin Password** to set or change a administrator password. There is no password by default. If a administrator password must be installed, select this field and enter the password. After the password has been added, the option is changed to **Unlock Password**.

5.9.1 System Configuration Lock

Use the **System Configuration Lock** menu (**BIOS Menu 19**) to set system configuration lock.



BIOS Menu 19: System Configuration Lock

5.9.2 HDD Security

Use the **HDD Security** menu (**BIOS Menu 20**) to set HDD password.

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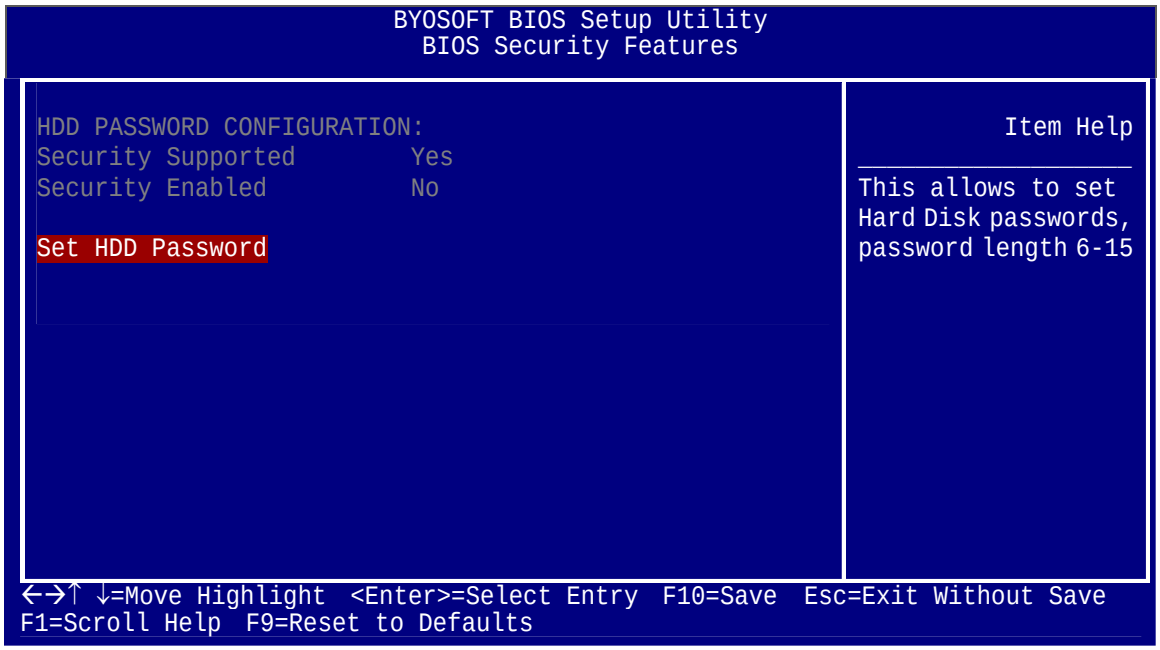
BYOSOFT BIOS Setup Utility
BIOS Security Features
HDD PASSWORD CONFIGURATION:
Security Supported Yes
Security Enabled No
Set HDD Password
Item Help
This allows to set Hard Disk passwords, password length 6-15
←→↑ ↓=Move Highlight <Enter>=Select Entry F10=Save Esc=Exit Without Save
F1=Scroll Help F9=Reset to Defaults

BIOS Menu 20: HDD Security

Appendix

A

BIOS Options

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Below is a list of BIOS configuration options in the BIOS chapter.

- **Load Optimized Defaults** **83**
- **Load Custom Defaults** **83**
- **Save Custom Defaults** **83**
- **Save & Exit Setup** **83**
- **Exit Without Saving** **83**
- **Date [Day mm:dd:yyyy]** **84**
- **Time [hh/mm/ss]** **84**
- **SATA Controller Mode [IDE]** **86**
- **Onboard USB Controller [Enable]** **87**
- **USB 2.0 Controller [Enable]** **87**
- **USB Keyboard Support [Enable]** **88**
- **USB Mouse Support [Enable]** **88**
- **Onboard Audio [Enable]** **88**
- **Onboard LAN [Enable]** **88**
- **Lan Boot ROM [Disable]** **88**
- **Super IO Watchdog Control [Disable]** **89**
- **Serial Port1 Address [3F8]** **89**
- **Serial Port1 IRQ [IRQ4]** **89**
- **Serial Port2 Address [2F8]** **90**
- **Serial Port2 IRQ [IRQ3]** **90**
- **Serial Port3 Address [3E8]** **90**
- **Serial Port3 IRQ [IRQ11]** **91**
- **Serial Port4 Address [2E8]** **91**
- **Serial Port4 IRQ [IRQ11]** **91**
- **Serial Port5 Address [2D0]** **92**
- **Serial Port5 IRQ [IRQ11]** **92**
- **Serial Port6 Address [2D8]** **92**
- **Serial Port6 IRQ [IRQ11]** **93**
- **Parallel Port Address [378]** **93**
- **Parallel Port Mode [Normal]** **93**
- **Parallel Port IRQ [IRQ7]** **94**
- **Console Redirection [Disable]** **95**
- **Serial Port Select [COM1]** **95**

- ➔ **Serial Port Baudrate [115200]** **96**
- ➔ **Memory Hole [Disable]** **97**
- ➔ **Pre Allocated Memory [32M]** **97**
- ➔ **DVMT Mode [DVMT]** **97**
- ➔ **DVMT Memory Size [256M]** **98**
- ➔ **Boot Display Output Device** **98**
- ➔ **Panel Type [BY HARDWARE]** **98**
- ➔ **Quick Boot [Disable]** **100**
- ➔ **Quiet Boot [Enable]** **100**
- ➔ **Bootup Num-Lock [On]** **101**
- ➔ **Power Supply Mode [BY HARDWARE]** **104**
- ➔ **ACPI Suspend Type [S3]** **104**
- ➔ **Restore on AC Power Loss [Power Off]** **105**
- ➔ **Resume By PCI-PME [Enable]** **105**
- ➔ **Resume By PCIE-PME [Enable]** **106**
- ➔ **Power On By Ring [Disable]** **106**
- ➔ **Power On By RTC Alarm [Disable]** **106**
- ➔ **DMA Channel# [Available]** **107**
- ➔ **IRQ#** **108**
- ➔ **Reserved Memory Address [Disable]** **108**
- ➔ **Smart Fan# Control [Disable]** **109**
- ➔ **Voltages** **110**
- ➔ **System Temperature** **110**
- ➔ **Fan Speeds** **111**
- ➔ **Password Check [Setup]** **111**
- ➔ **Admin Password** **112**

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Appendix

B

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and DVD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides DVD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.
DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.

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DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
EIST	Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.
FSB	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Output Control Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.
LDVD	Liquid crystal display (LDVD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.

LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LVDS displays to a computer.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

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Appendix

C

Watchdog Timer

NOTE:

The following discussion applies to the DOS environment. Contact CyberResearch, Inc. for Windows driver support.

The Watchdog Timer is a hardware-based timer that attempts to restart the system when it stops working. The system may stop working because of external EMI or software bugs. The Watchdog Timer ensures that standalone systems like ATMs will automatically attempt to restart in the case of system problems.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table C-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

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NOTE:

The Watchdog Timer is activated through software. The software application that activates the Watchdog Timer must also deactivate it when closed. If the Watchdog Timer is not deactivated, the system will automatically restart after the Timer has finished its countdown.

EXAMPLE PROGRAM:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:
;
        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT     15H
;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP     EXIT_AP, 1      ;is the application over?
        JNE     W_LOOP          ;No, restart the application
        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT     15H
;
; EXIT ;
```

Appendix

D

Digital I/O Interface

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D.1 Introduction

The digital I/O is used for machine control and automation.

D.2 DIO Connector Pinouts

Located in the Connectors section of this document.

D.3 Assembly Language Example

```
;************************************************
; DIO Port:   0A21h[3:0] (4 Out)
;             0A22h[3:0] (4 In)
;************************************************

;================================================
; Get current input and output values into AL register
; AL: bit0~bit3 as output value
;     bit4~bit7 as Input value
;================================================

      mov     dx, 0A21h       ; GPIO output I/O base address
      in      al, dx          ; Get output status
      jmp     $+2             ; Wait
      jmp     $+2             ; Wait
      and     al, 0Fh
      mov     bl, al          ; Move al to bl temporarily

      inc     dx              ; sets dx to 0A22h
      in      al, dx          ; Get input status
      jmp     $+2             ; Wait
      jmp     $+2             ; Wait
      and     al, 0Fh
      rol     al, 4           ; Shift input values over
      or      al, bl          ; Merge all results into AL
                              ; AL: bit0~bit3 as output value
                              ;     bit4~bit7 as input value


;================================================
; Output value (x) to GPIO
; AL: bit0~bit3 as output value
;================================================

      mov     al, 0xh         ; x is the output value (0 ~ Fh)
      mov     dx, 0A21h       ; GPIO output I/O base address
      out     dx, al          ; bit0 ~ bit3 as Output value
                              ; bit4 ~ bit7 are Reserved
```

Product Service

Diagnosis and Debug

CyberResearch, Inc. maintains technical support lines staffed by experienced Applications Engineers and Technicians. There is no charge to call and we will return your call promptly if it is received while our lines are busy. Most problems encountered with data acquisition products can be solved over the phone. Signal connections and programming are the two most common sources of difficulty. CyberResearch support personnel can help you solve these problems, especially if you are prepared for the call.

To ensure your call's overall success and expediency:

1) Have the phone close to the PC so you can conveniently and quickly take action that the Applications Engineer might suggest.
2) Be prepared to open your PC, remove boards, report back-switch or jumper settings, and possibly change settings before reinstalling the modules.
3) Have a volt meter handy to take measurements of the signals you are trying to measure as well as the signals on the board, module, or power supply.
4) Isolate problem areas that are not working as you expected.
5) Have the source code to the program you are having trouble with available so that preceding and prerequisite modes can be referenced and discussed.
6) Have the manual at hand. Also have the product's utility disks and any other relevant disks nearby so programs and version numbers can be checked.

Preparation will facilitate the diagnosis procedure, save you time, and avoid repeated calls. Here are a few preliminary actions you can take before you call which may solve some of the more common problems:

1) Check the PC-bus power and any power supply signals.
2) Check the voltage level of the signal between SIGNAL HIGH and SIGNAL LOW, or SIGNAL+ and SIGNAL– . It CANNOT exceed the full scale range of the board.
3) Check the other boards in your PC or modules on the network for address and interrupt conflicts.
4) Refer to the example programs as a baseline for comparing code.

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In most cases, a returned package will be refused at the receiving dock if its contents are not known. The RMA number allows us to reference the history of returned products and determine if they are meeting your application's requirements. When you call customer service for your RMA number, you will be asked to provide information about the product you are returning, your address, and a contact person at your organization.

Please make sure that the RMA number is prominently displayed on the outside of the box.

• Thank You •

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